VOL. XXXV. No. 9 SEPTEMBER 1950

MECCANO MAGAZINE

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9D.

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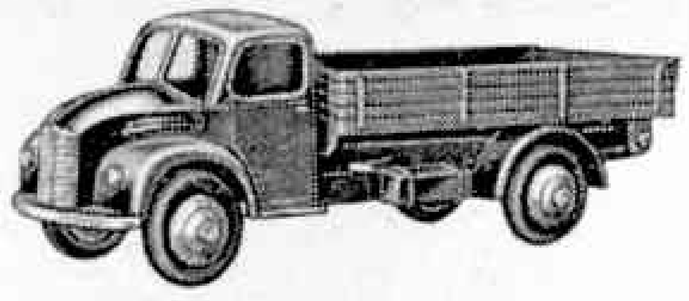

Rear Tipping Wagon
No. 30m
Has tipping body operated by lever, and hinged tailboard On Dodge chassis

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No. 29f
A handsome model of a motor coach with rear section raised to give passengers good views in all directions

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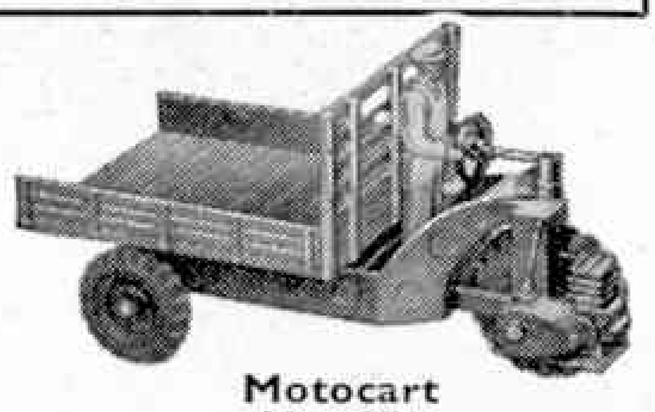

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Estate Car
No. 27f
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No. 30h
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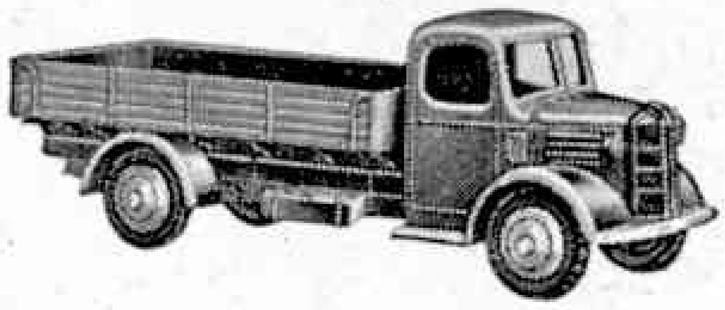

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No. 30j
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No. 30s
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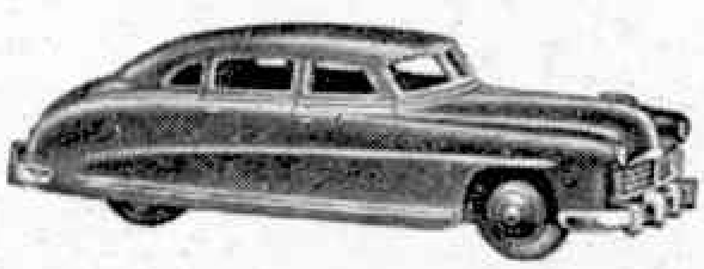

Hudson "Commodore" Sedan
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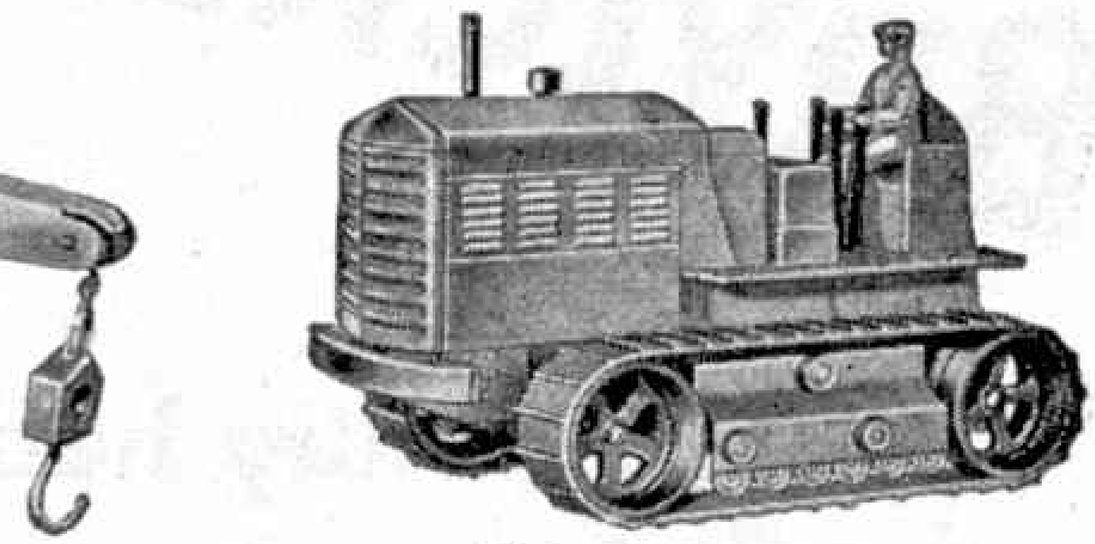

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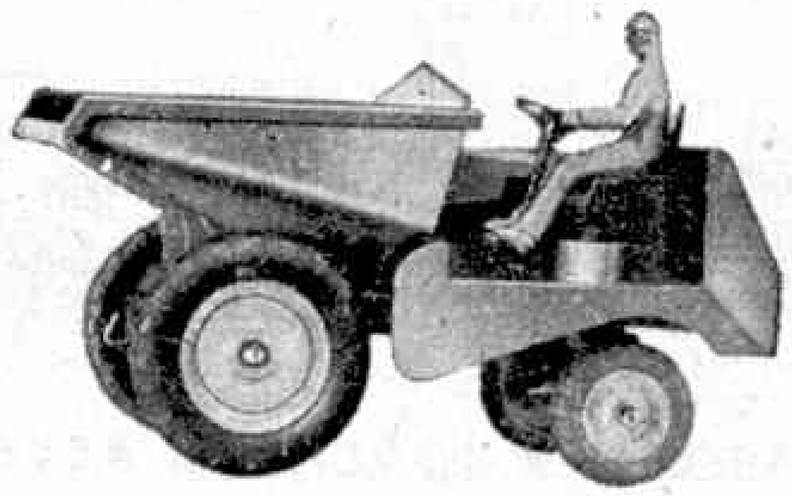

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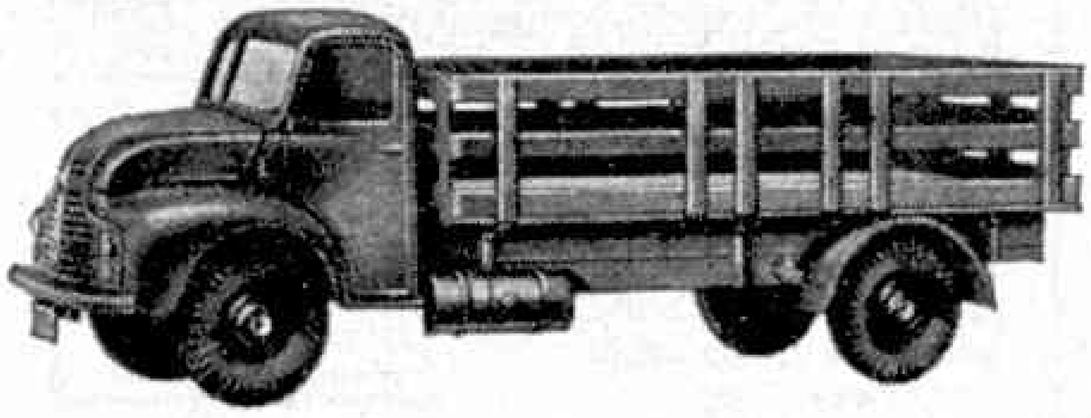

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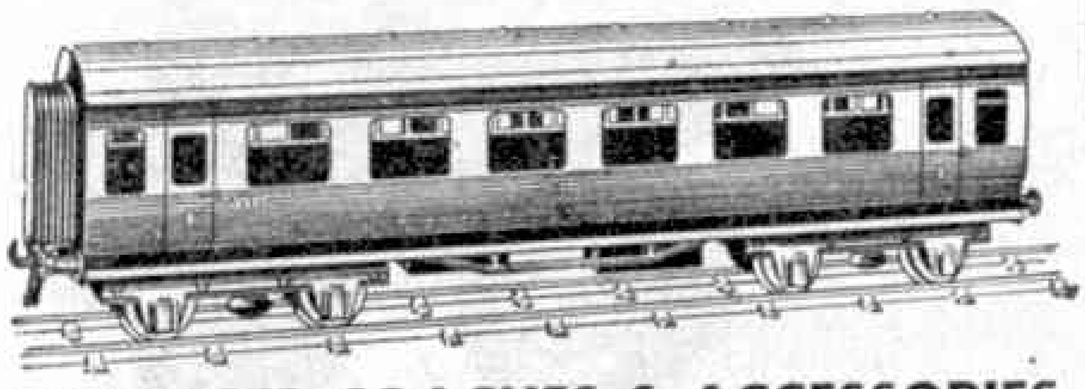

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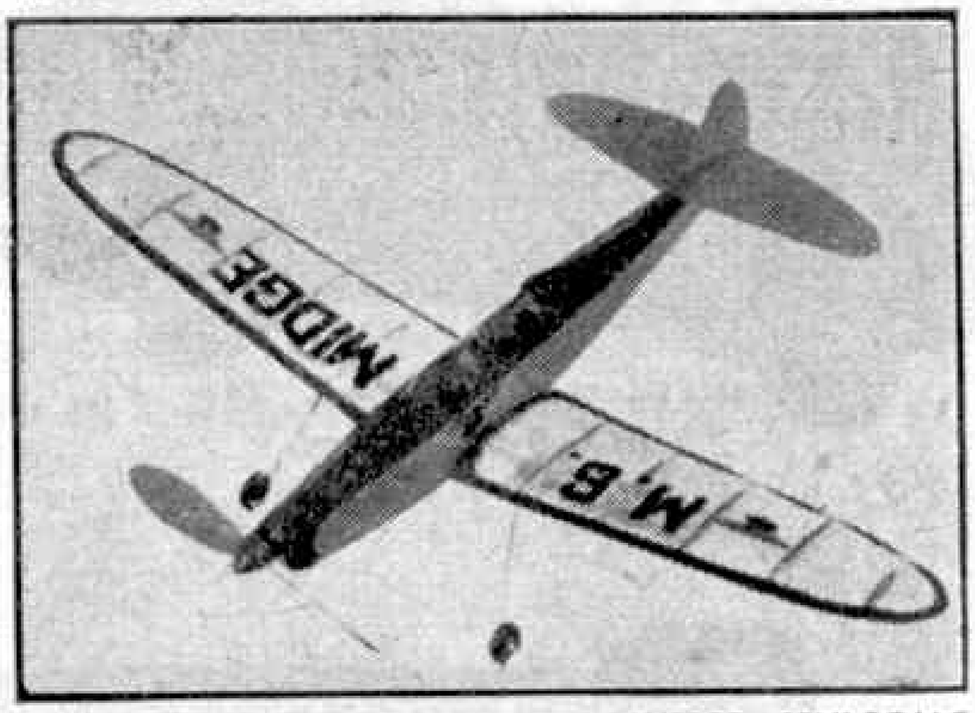

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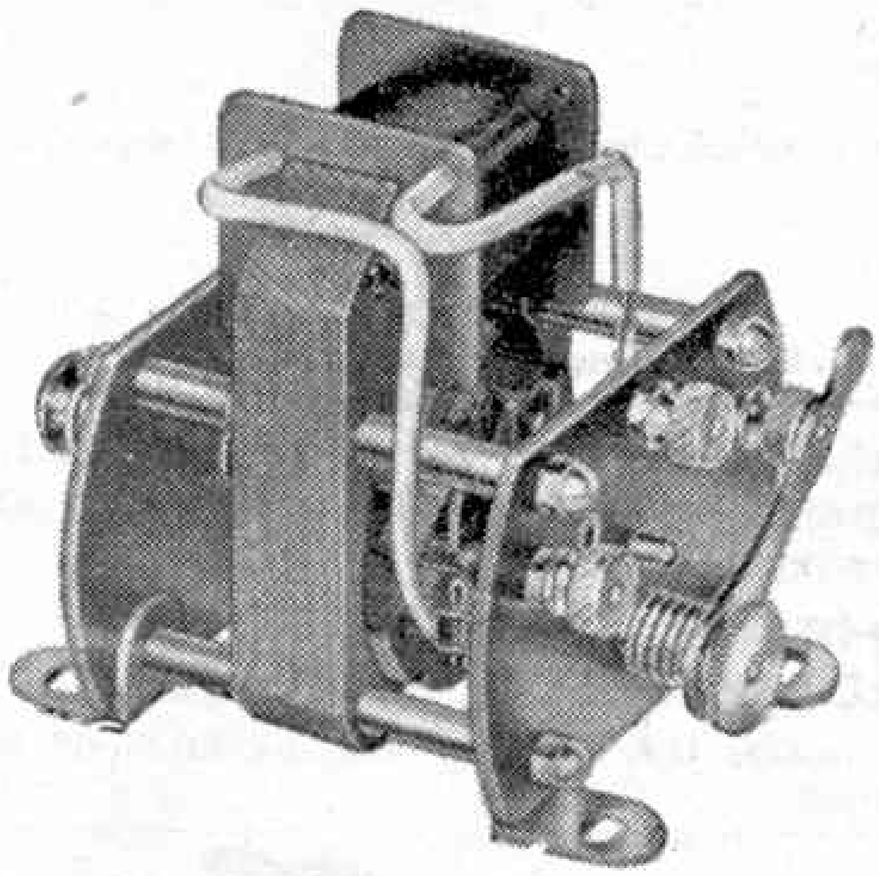

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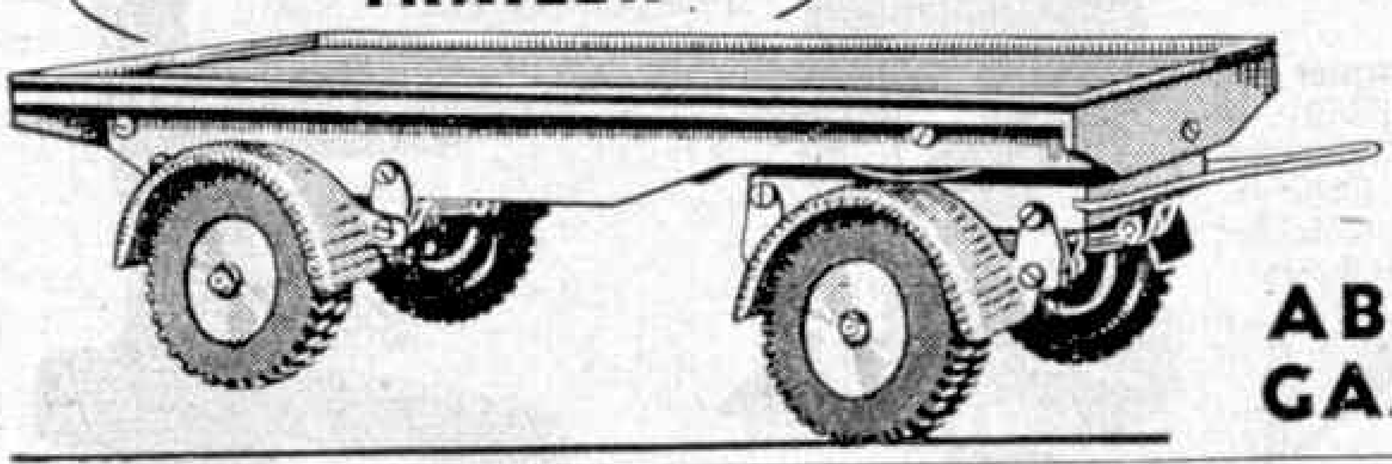

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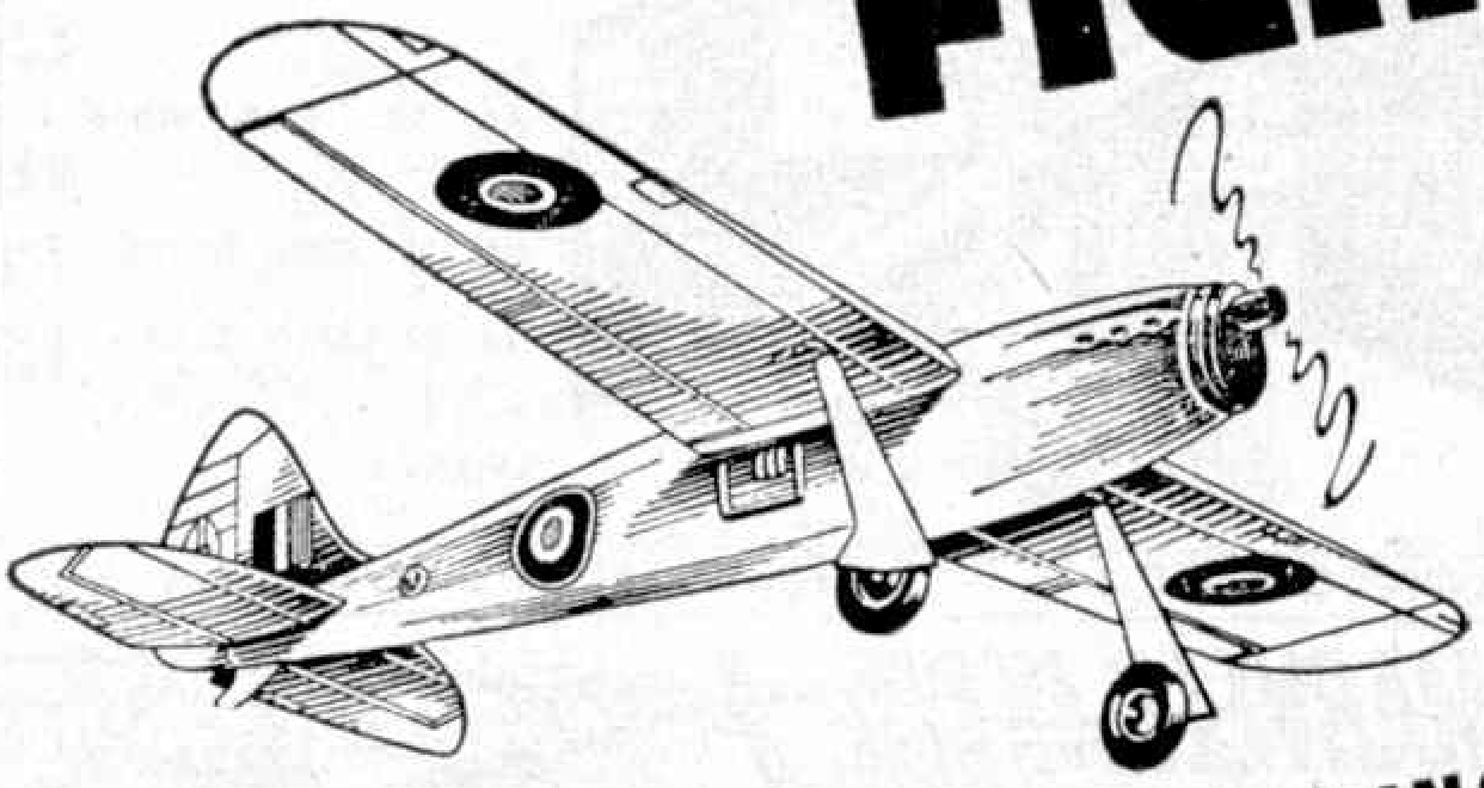

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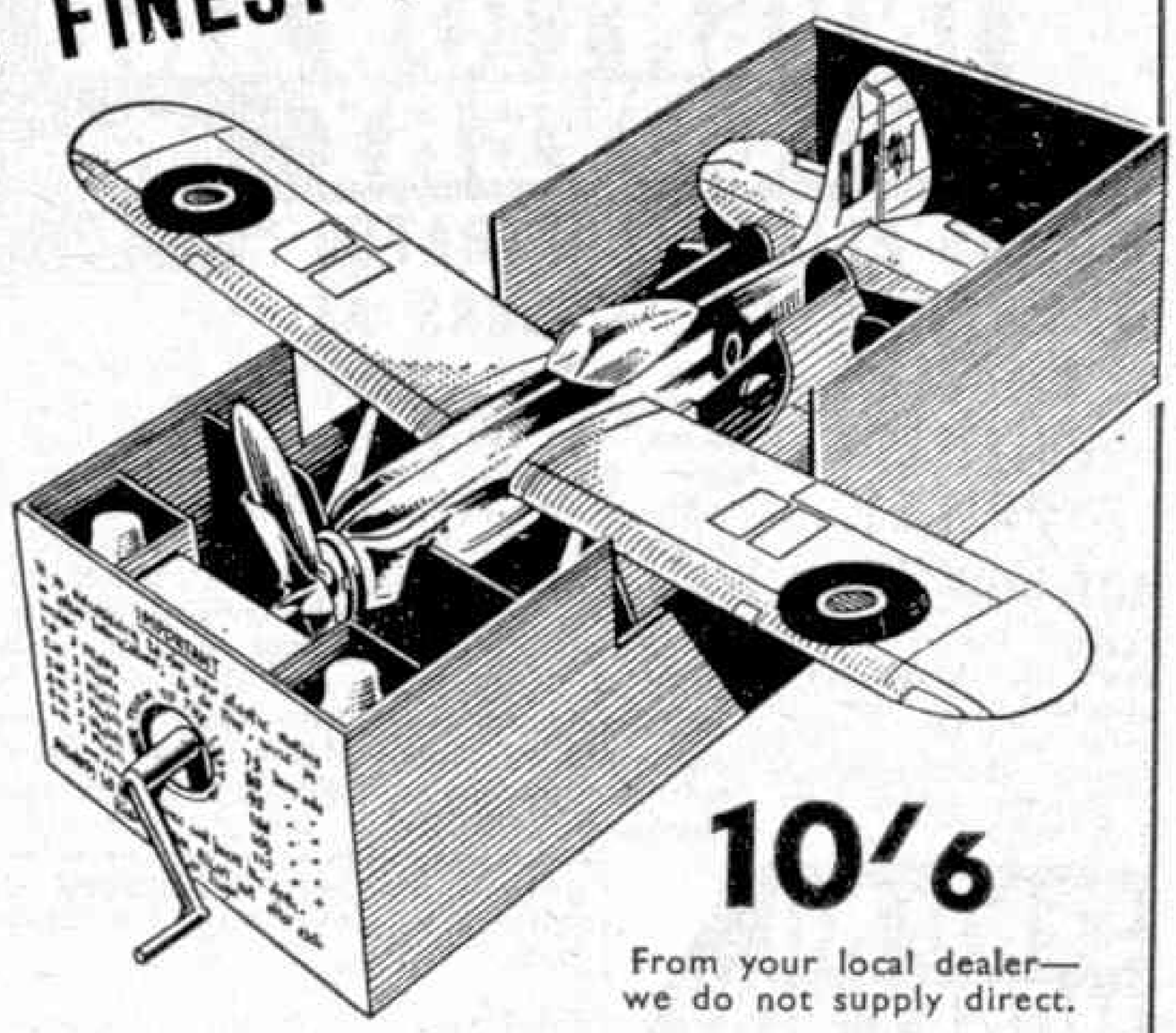

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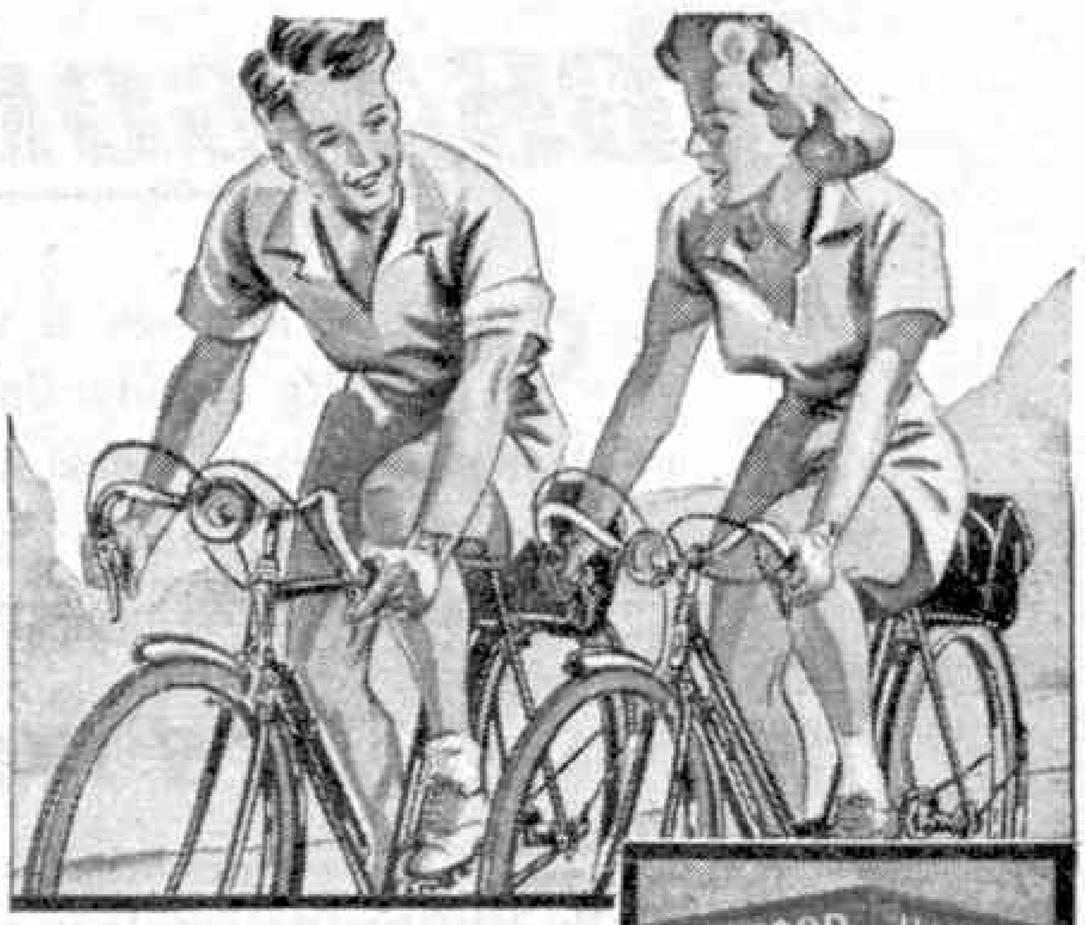

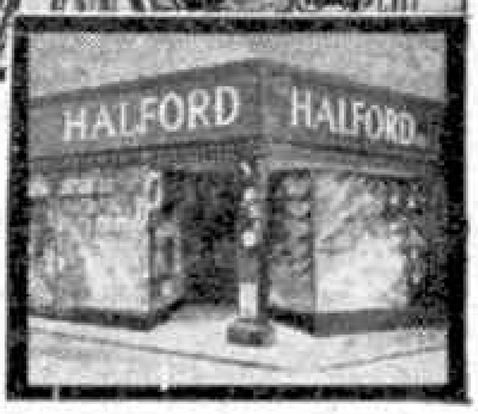

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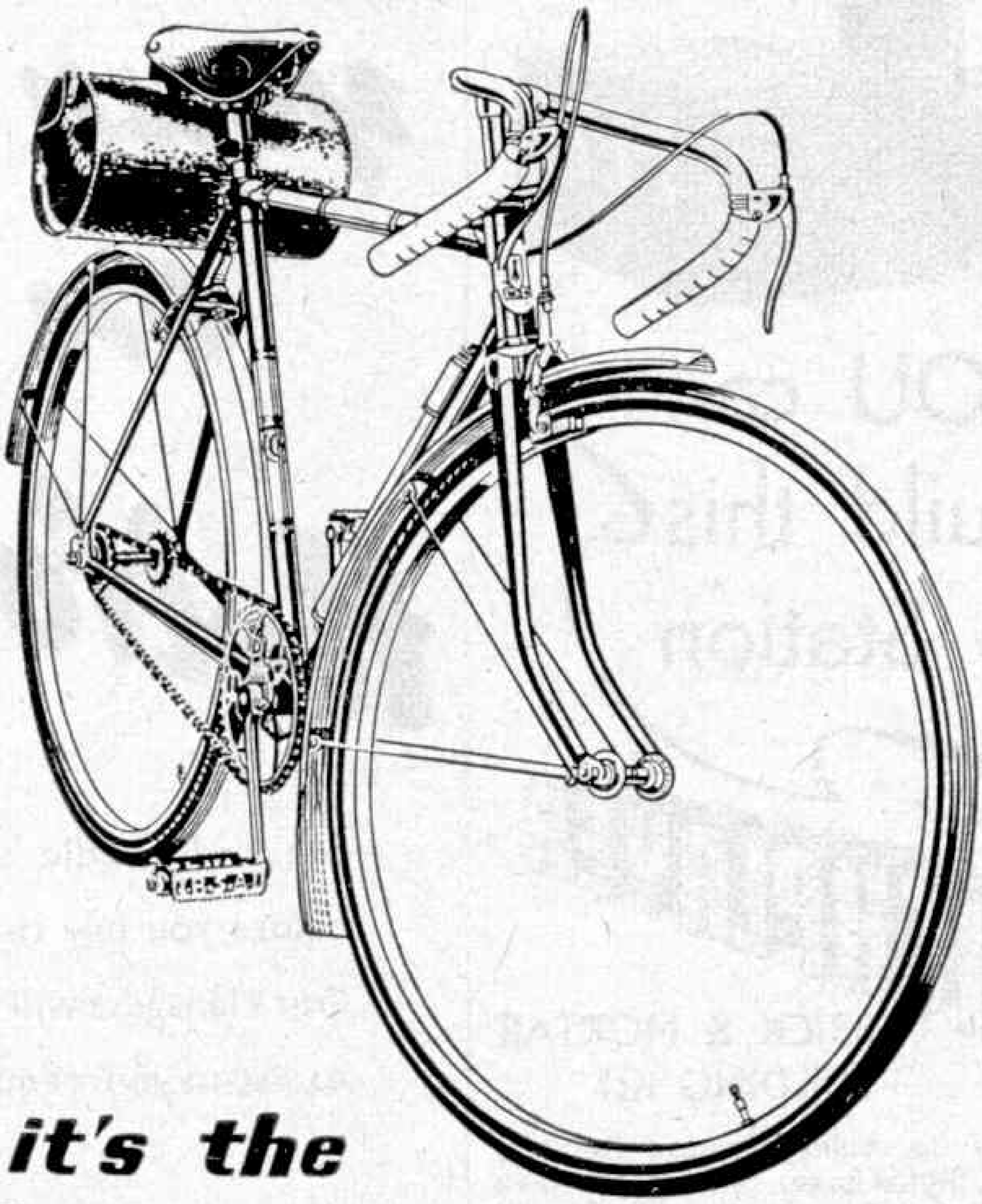

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Editorial Office:
Binns Road
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Vol. XXXV
No. 9
September 1950

With the Editor

Making Sure of Water

Those of us who live in areas where water is abundant are apt just to take this commodity for granted. It is difficult for us to realise the vital importance of water in dry parts of the world.

The Paraguana Peninsula of Northern Venezuela is an arid and desolate region, and the recent construction of the Shell and Creole Petroleum Companies' refineries there has made an adequate and reliable supply of water an urgent necessity, not only for the thousands of workers employed, but also for many of the refining processes. To produce the water by distillation or to transport it in tankers, as the refineries have had to do until recently, is costly and uneconomical; and so the two oil companies, in association with the Venezuelan Government, have had an 80-mile long pipeline constructed from the Siburua Springs, a natural water supply in the foothills of the San Luis range, on the mainland. This line, now in operation, is 34 inches in diameter at its origin, narrowing to 30 inches for its main portion.

Although the resources of the Siburua Springs are believed to be sufficient to provide the necessary water at all seasons, no chances have been taken, and in order to make quite sure of an unfailing supply nine wells have been drilled in the neighbourhood, six to belong to the oil companies and three to the Venezuelan Government.

An interesting feature of this pipeline, half of which was manufactured by British firms, is a complete coating of pipeline enamel on the inside of the multiple-jointed steel pipe—an operation that has never before been carried out successfully. The result should be to prevent corrosion and provide an uncontaminated supply. The line was laid on top of the ground throughout its course, and as the difference in elevation at the origin and the termini is some 800 feet, it operates entirely by gravity.

The introduction of running water brings one more service to the miniature township of about 10,000 inhabitants that Shell have built for staff and labour at their Cardon refinery, which came on stream last year and has an annual output of some three million tons. Further installations are now under consideration.

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A Paddington express passing through Tiverton Junction on the up fast line. Note the loop or "slow" roads serving the platforms used by stopping trains.

Making Railway Timetables

By *"Tempus Vir"*

IF you were asked which of the many interesting features of railway operating appealed most to you, I wonder how many would say *"The timetables."* To most people they seem to be things to be avoided, and really quite uninteresting; or at the best only to be consulted with some show of eagerness when the summer holidays draw near. Many take one look and then make for the nearest Railway Enquiry Office. Why should so many people find the greatest difficulty in understanding this masterpiece of scheming and planning?

I suppose it really is because they are interested only on rare occasions; but what of you railway enthusiasts, many of whom have your own railways? Do you work to a timetable? There is far more interest in running to schedule than in despatching your trains without any definite plan in mind.

In working out a timetable for your miniature railway you will begin to realise the problems of the man whose job it is to lay down the timetables for one of the Regions of British Railways. He has to have an intimate knowledge of the layout of all the stations within the area for which he is responsible and this might cover anything up to 200 stations. Then he must know exactly where every signal box is situated and the mileage between each box, for this determines his running headway, or in other words the minimum time he can allow between any two trains running in the same direction. How much time shall he allow at this or that station? A milk tank has to be attached here, or a through portion from another line to be attached there. He must be conversant with these varied requirements of each train, be it an express or just the local "stopper"; and he must make due allowance in his timings to cover the necessary movements to obviate delays arising at the stations.

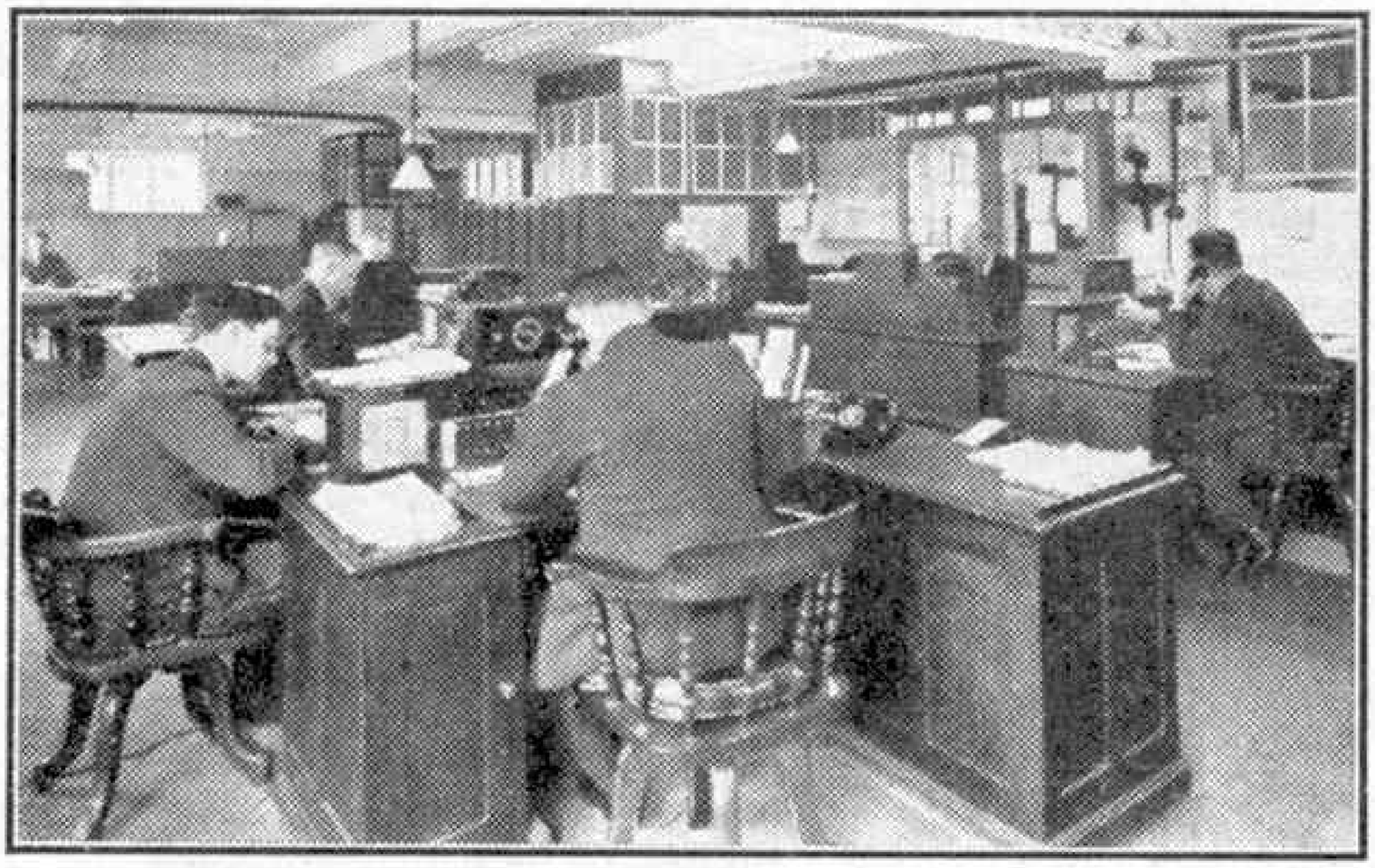
How does he begin this task? First he deals with the glamour trains of the railways, those long-distance, fast-running, named expresses. Their times are settled and their paths are plotted in the form of a time-distance graph on squared paper, on which each tenth of an inch represents one minute of time. Locomotive requirements such as changing engines or taking water must be given due consideration and more time must be given at the big junctions for the heavier transfer of passengers and baggage.

Next come the stopping trains, and they are very difficult to schedule. They have to be arranged to give connections for passengers out of the express trains and also to feed passengers into them. They are, naturally, slower runners than the crack trains, and problems begin to arise when an express begins to overtake a stopping train. Then the timing expert has to call on his knowledge of the track and arrange for the local to reach a convenient station where there is a loop line into which it can run clear of the main line, so that the express can pass. Here also

the knowledge of the distance between the signal boxes comes into play, coupled with the different running times of the two trains, as sufficient time must be allowed for the signalmen to give *"Train Out of Section"* for the local and then pull off all signals if the express is to run unchecked. Even a distant signal check may cause an express train to lose up to six minutes; so there must be no guessing, but very careful calculation of relative speeds and distances.

So much for the passenger trains, the timings of which you see in what are known as the Public Timetables; but what of the parcels or stores trains, the fast and slow freights, ballast trains and light engines? These all have to be dovetailed into the scheme of things and plotted on the graphs. Then they are all carried into the Working or Service Book, which of course is the timetable for the railway staff.

As you probably know, railway services are usually changed twice a year, the winter programme starting early in October and continuing until about the end of May, with the summer programme occupying the time between. You may ask: "When do the timing experts commence work on a new timetable?" The answer is, in the case of the summer timetable, approximately nine months before it is due to operate. Careful examination of the actual performance of the trains during the past season is made. Some may have become more popular than others, and as a result regular delays may have occurred at one or more stations. Extra time must then be given at these stations, and this often results in the retiming of a whole group of trains.



A Control office scene. A telephone network enables the controllers to regulate the movements of traffic with which they are kept in constant touch. British Railways Official Photograph.

This revision of the actual performance of the trains is not so difficult as it might seem, because the guard of each train has to render a daily record or "journal" of the running of his train, showing the reason for any delays at stations or by signals, time lost by the engine in running or by engineering slacks and by waiting to make connections. He will also show any time made up at stations. So you see a comprehensive account is available to the Timing Section on which to base adjustments for the next service, the watchword of the timing clerks being "improvement."

The railways are slowly returning to pre-war timings and last summer saw the appearance in the Public Timetables of many new long-distance trains, starting from the furthermost parts of the North of England to distant Cornwall and the South, and sometimes running through the areas of three Regions of British Railways. (*Continued on page 428*)

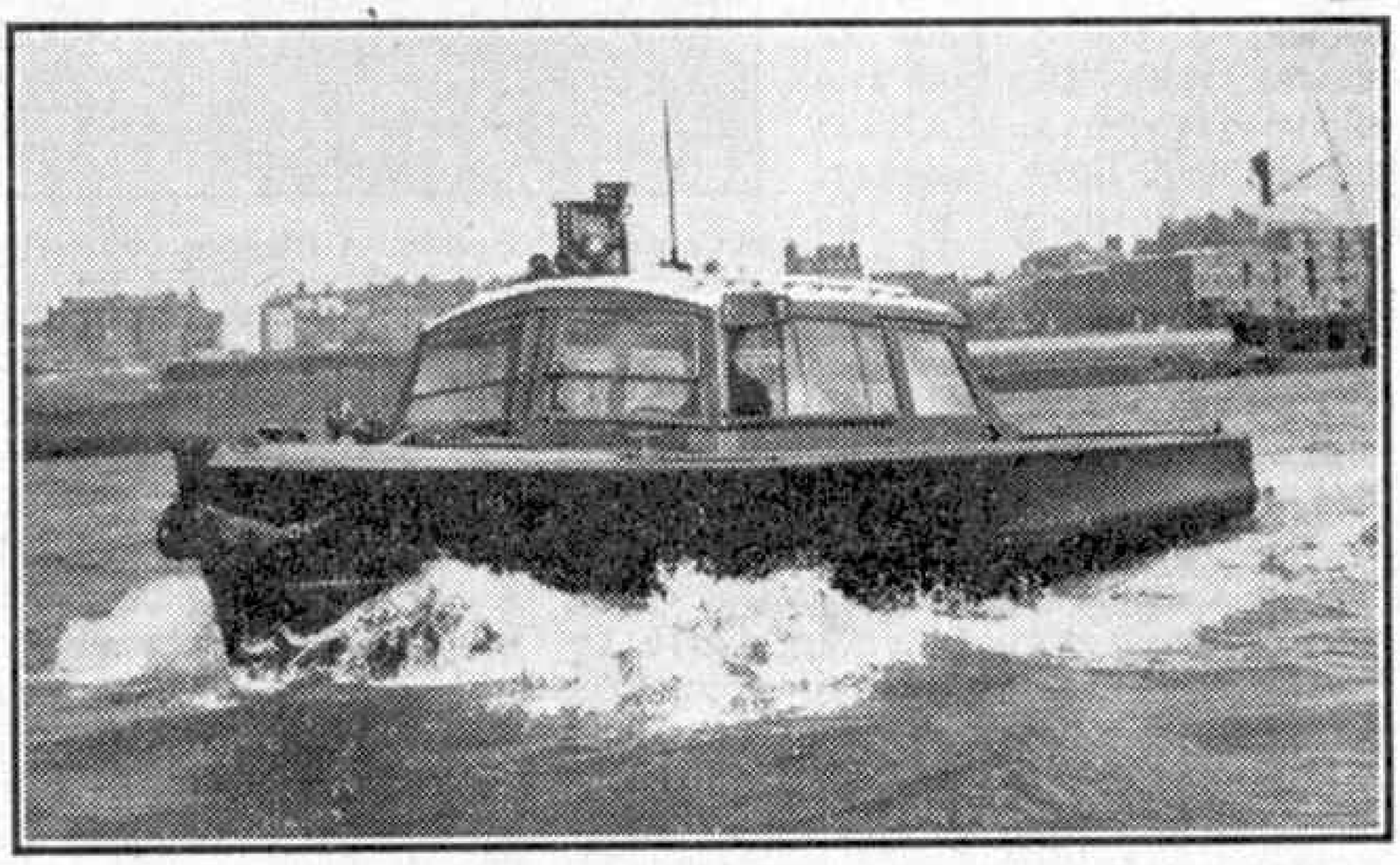
W.R. Exeter-Tiverton Junction local train waiting at Exeter for the arrival of the "Torbay Express."

Policing London's River

By Trevor Holloway

THE thirty-six mile stretch of river from Teddington to Dartford Creek is probably the richest water highway in the world. Millions of pounds' worth of merchandise are stored along its banks, and close on 10,000 barges are constantly nosing their way up and down the river bearing cargoes that are not only costly but scarce. On an average, 60,000 vessels from all parts of the world berth in the Thames every year.

One might suppose that such a concentration of wealth would result in the Thames being the most crime-infested region in the country, but surprisingly enough there is less crime on the river to-day than in many a country town. Petty pilfering, attempted customs evasion and so on do exist, but only on a comparatively small scale in relation to the extent and importance of the river commercially. It is the presence of the small but highly efficient force of River Police with their ceaselessly patrolling launches that acts as a deterrent to would-be lawbreakers.



A Thames River Police launch on patrol. The illustrations to this article are reproduced by courtesy of the Commissioner of Police of the Metropolis.

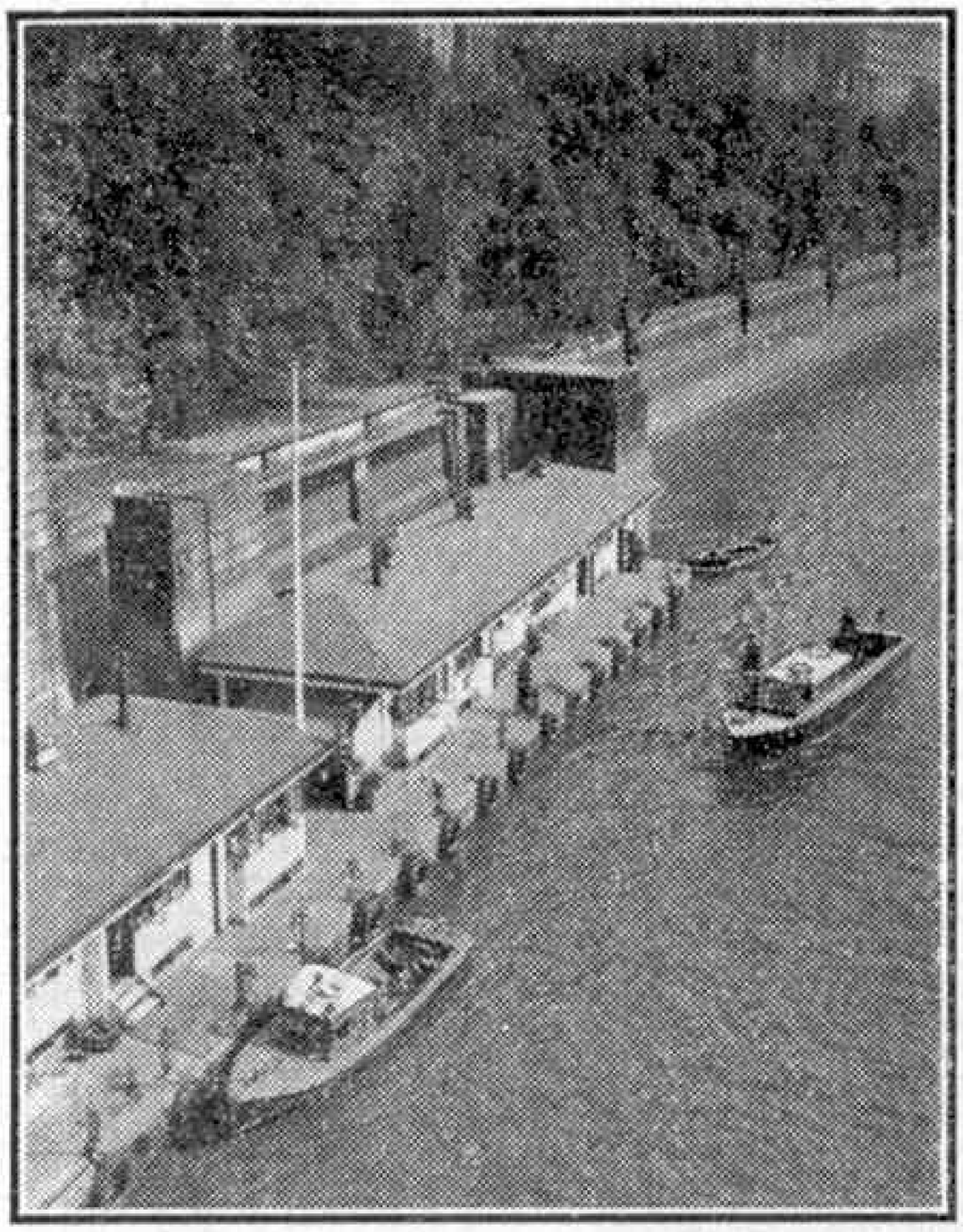
A century and a half ago it was a very different story. In those days London's riverside was a particularly unsavoury region. Squalid, unplanned and ill-lit, it stretched past Wapping, noted haunt of lawless seafarers and shady characters, to Limehouse. Adjacent were the poverty-stricken hamlets of Mile End and Bethnal Green. In these, and other places along the river, flourished well-organised bands of thieves and receivers who found the Thames, its shipping and warehouses, an unguarded and highly profitable hunting ground.

Whole strings of barges were cut adrift and towed to some quiet creek where confederates were waiting to unload them; armed raids were made on larger vessels and the crews held captive while the raiders ransacked the holds. In some cases the bandits threw the crew overboard and sailed the vessel down river and out to sea with the cargo intact. If a vessel managed to unload its cargo without losing at least a third of it, the owners thought themselves lucky.

The famous "Thames Division" of to-day is an offshoot from the West India Company of Merchantmen, which in order to protect cargoes of merchandise against looting and pilfering, set about organising their own force to combat the evil. Backed up by Patrick Colquhoun, a London magistrate, the scheme proved so successful that it was extended and in 1798 the Marine Police came into being.

Two years later this force was taken over by the Government, and Capt. John Harriott, a much-travelled mariner, was placed in charge. Although armed only with cutlasses and blunderbusses, and using rowing boats, the Marine Police, recruited from the seaman and waterman classes, succeeded in smashing most of the gangs in less than two years. At last the copes, mudlarks, light and heavy horsemen and scuffle-hunters, as the river raiders were classified, met their match, and a great many were deported for life.

In 1839 the Marine Police were incorporated in the Metropolitan Police Force and became known as the "Thames Division." In 1885 the first steam launch was brought into service and gradually the rowing boats gave place to motor boats and launches. To-day the River



The Waterloo Pier Station of the Thames Division. The stage is the only floating police station in the world.

Police have a fleet of craft capable of outpacing any vessel on the river. Normally about 45 craft are in commission, including three 100¾ h.p. models having a speed of 26 knots. The more familiar 30 ft. launches have 80 h.p. diesel engines, giving them speeds up to 15 knots.

The "Thames Division" stations were originally hulks moored in the river, but with one exception these have been replaced by buildings, Waterloo Pier remaining unique as the only floating Police Station. The present-day Force is served by five Stations, from each of which a specified part of the river is patrolled by day and night.

The Headquarters of the Force is at Wapping and here may be seen the various types of equipment used. It includes various "creep" drags and boat drags for recovering bodies or objects from the river bed, and a specially designed electro-magnetic drag which can detect under-water metal objects, including firearms and other weapons hastily disposed of by crooks in the hope of destroying tell-tale evidence of their activities. There are also the latest types of stretchers, first-aid kits, resuscitators for pumping air into waterfilled lungs, and a specially devised apparatus in the form of a pistol which fires a light line to persons trapped on mudbanks. The electromagnetic drag incidentally was instrumental in fishing up evidence from the river bed which sent a recent murderer to the gallows.

Each boat is equipped with drags, lifebuoys, buoyant cushions, and salvage and first-aid gear, in addition to two-way radio-telephony, which keeps the crews in constant touch with the Information Room at Scotland Yard as well as the five Stations along the river. Thus, any incident reported along the thirty-six mile stretch of river can be investigated by the nearest patrolling launch within a matter of minutes. Often the launch arrives on the scene even before the informant has finished his "999" call!

The system of patrols is similar to that carried out on land. Each boat's crew, consisting of a Sergeant, who acts as coxwain, and two Constables, works a full eight-hour shift. All the men must have exceptional physique, and must be powerful swimmers, skilled in first-aid, and well versed in the numerous and complicated regulations regarding shipping and river by-laws, and above all they must possess the ability to act coolly and quickly in an emergency.

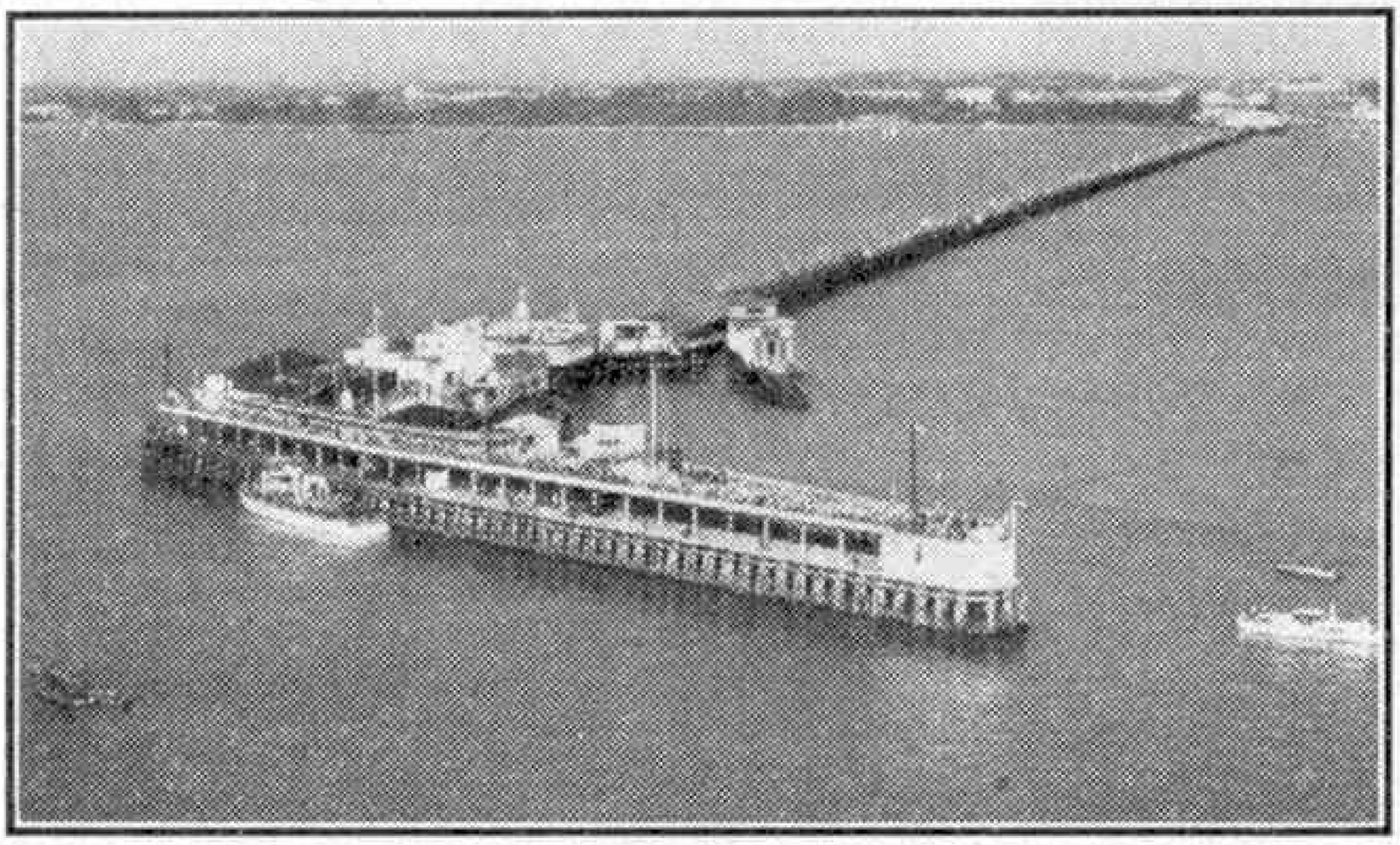
By constant practice, men of the River Police develop their powers of observation to a high degree, and so familiar do they become with life on the Thames that they are quick to detect the unusual, such as an unfamiliar boat, a craft piloted by a person who is obviously not conversant with the currents, or (*Continued on page 428*)

River police render first aid.

Britain's Famous Pleasure Piers

By Arthur Gaunt, F.R.G.S.

AT dozens of Britain's seaside resorts to-day the pleasure pier is one of the most popular attractions. These structures jut out into the ocean and so enable the landlubber to enjoy the open sea without incurring the discomforts often inseparable from sailing. At many resorts they serve as landing stages for pleasure steamers. Their popularity may be judged from the fact that Brighton's West Pier alone is used by 1,250,000 persons every summer, and this number is increasing despite the many counter attractions introduced since this pier was built in 1865.



Southend Pier, the largest structure of this kind in the world, seen from the air. A double track electric railway runs along its 1½ mile length.

Brighton indeed pioneered the pleasure pier, for the old Chain Pier constructed there in 1823 was the first of its kind in the world. Building it was a daring idea, for there were formidable engineering problems, and many experts predicted that the structure would soon succumb to the storms sweeping inshore from the English Channel during the winter months. Yet it survived for 73 years, and was patronised by many artists, actors, engineers and other notabilities, as well as by hundreds of thousands of ordinary holiday makers.

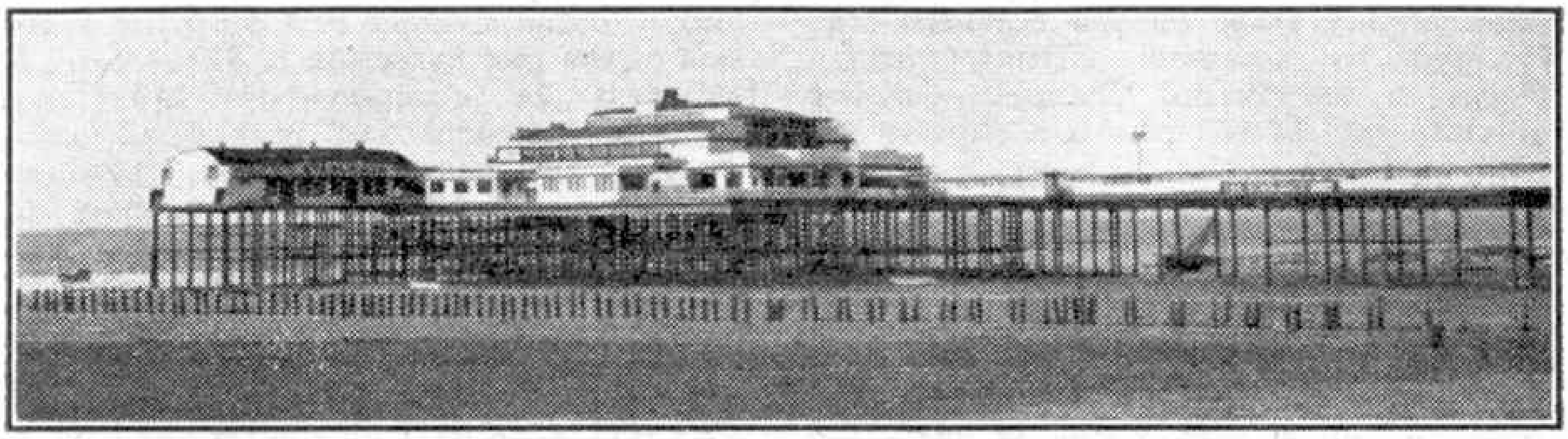
The success of this remarkable engineering enterprise must be accredited chiefly to a naval officer, Captain Sir Samuel Brown. Despite dissuasion he decided that a promenade deck could be built over the sea, provided some system of suspension was adopted. This he achieved by running massive chains from the cliff near the Marine Parade and carrying these over four towers built on piles embedded in the sea bed. A landing stage at the seaward end was used by cross-Channel passenger ships, and the towers incorporated shops and refreshment rooms.

Until 1896 this parent of all pleasure piers was immensely popular, and was visited by many royal personages. Among them were Queen Victoria and the Prince Consort, who landed there in 1843 on returning from France. Other distinguished persons who paid visits were the Shah of Persia, Lord Palmerston, and Ex-Queen Isabella of Spain.

The end of the structure came just 54 years ago, when it was found to be leaning 6 ft. 9 in. out of the perpendicular and an order for its closure was made. Arrangements were then made for it to be demolished, but before these could be carried out a great storm performed the job. Neptune at the same time struck a blow at Brighton's West Pier, then 31 years old, debris from the old Chain Pier being swept against it and causing a breach.

That second pier at Brighton, one of the many built round the coasts of Britain after the success of the Chain Pier became evident, was opened in 1865, though for 25 years it was purely a promenade without buildings, windscreens or landing stages, and the concert hall was not completed until 1916. Brighton's newest pier is the Palace Pier, built at the beginning of the present century.

The heyday of pier-building was during the second half of the 19th century, when dozens of resorts took up the idea and many companies were formed to finance such schemes. Parliament too, devoted a good deal of time to these projects, for an Act must be passed before a pier can be built. Parliamentary permission



The Central Pier, Morecambe, is 81 years old. Some of the piles on which it is supported go to a depth of only 6 ft., for rock is encountered at that depth.

is deemed necessary because structures jutting out into the sea for hundreds of feet may menace shipping, and the indiscriminate erection of them could be a danger to navigation.

The constructional and maintenance work brings its own problems, and every project of this kind has to be studied individually by engineers. Our first promenade piers were supported by open pile work of timber or cast iron, and lessons learned in building jetties for shipping were applied to these more modern ones built chiefly for pleasure. The methods used by such famous civil engineers as John Smeaton and Thomas Telford, whose activities included not only the construction of lighthouses and roads respectively, but also piers for shipping, were closely examined and the principles then applied to pleasure piers.

Steel was used for the supports when some of our comparatively recent ones were built, but the most modern method is to use reinforced concrete for both the pile supports and the superstructure. This idea not only enables a firm pier to be constructed, but also baffles the sea creatures that are always ready to launch an attack on wooden piles. Tiny denizens of the ocean find that wood is a tasty meal, and many thousands of pounds' damage has sometimes been done by them.

In the past the menace was minimised at some resorts by setting the pier on supports made from Brazilian greenheart, a variety of wood less to the liking of marine creatures than British timber. Even the concrete pier needs some wood for the balks and landing stages, however. A timber framework is therefore often built round the main structure when a pier on concrete piles is to be used by shipping.

In deciding upon the length and height of a pier, the surroundings as well as the average rise of the tide must be taken into consideration. The aim is to have the promenade deck slightly higher than the crest of the highest waves, and that factor is governed partly by the amount of exposure the structure will sustain. A pier in a sheltered bay can be lower than one at a more open part of the coast-line.

Birnbeck Pier at Weston-super-Mare is unusual because it uses the offshore island of Birnbeck as the pierhead. It is the older of the two piers at this resort, having been built in 1863–1867, and is 1,000 ft. long. The columns are 50 ft. apart and it is a continuous girder type bridge. The lattice girder surrounding the jetty was last renewed in 1948, and a

The Grand Pier at Weston-super-Mare was to have had a tramway alongside the promenade and to have been used as a landing stage, but these plans have not been carried out.

steel landing stage on the northern side is used by steamers visiting various places in the Bristol Channel. On the opposite side of the pier is a slipway for the life-boat.

The Grand Pier at Weston-super-Mare was sanctioned by Parliament in 1893, but the necessary capital was not raised until 1903. Working night and day, the engineers had completed 360 yards of pier and built the pavilion by June 1904. That original project is said to have cost £120,000, and the long-term object was to extend the pier to the low-water mark, thus enabling steamships of the Bristol Channel Passenger Steamer service and the Cardiff-Weston Ferry service to embark and disembark passengers there. The plan also envisaged the construction of a tramway along the south side, and at one period part of the pier on this side was undecked and reserved for such a tramway.

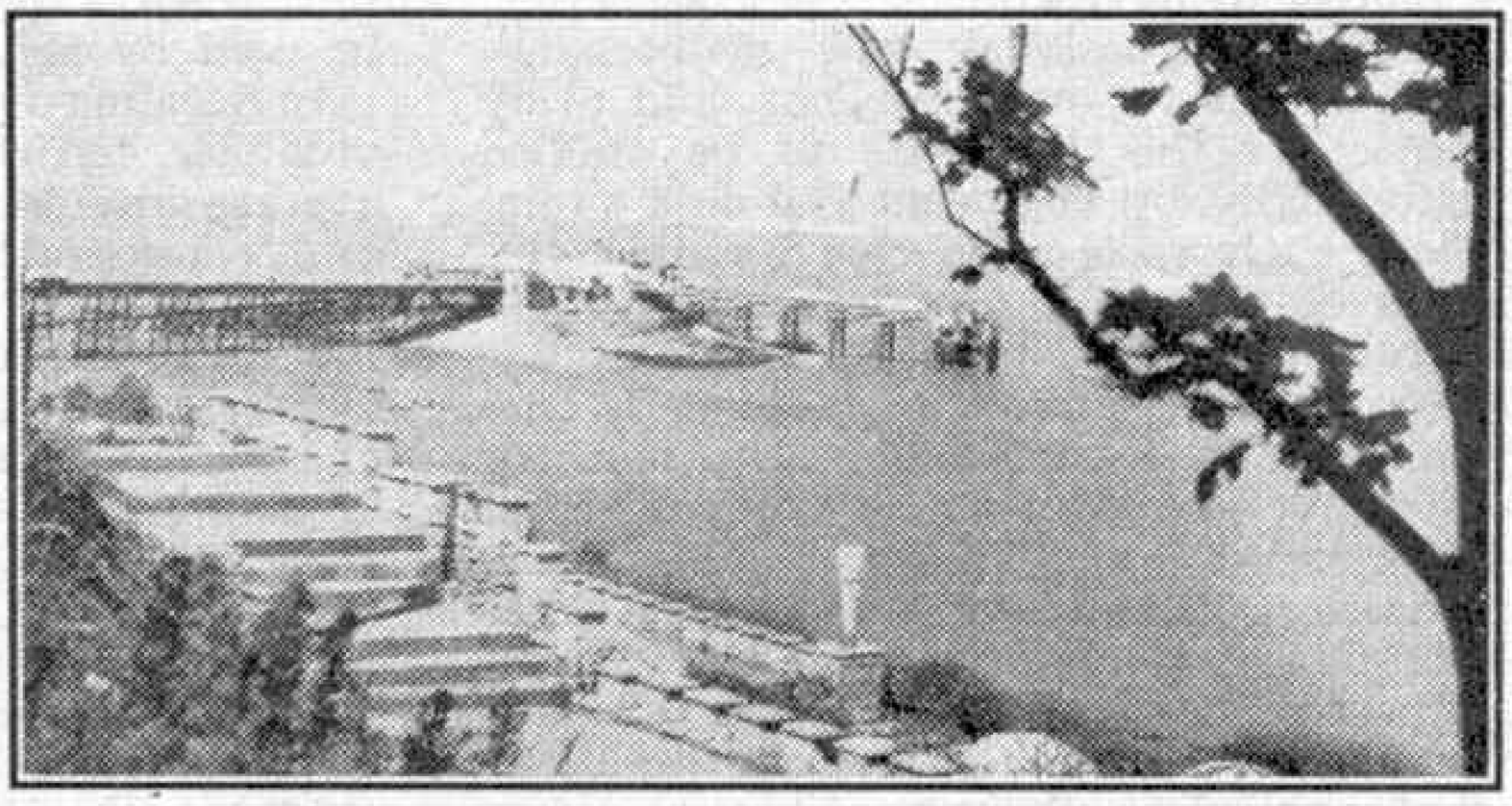
The scheme failed to materialise, for although the structure was extended a further 450 yards, and a landing stage was built at the furthermost point, only one steamer called there! Cross currents and silting of the channels prevented the regular use of this landing stage. Various improvements have been carried out in other directions, however, and as recently as 1931 a draft bill was put before Parliament for additions to this Somerset pier. These followed a destructive fire in 1930.

Had the original scheme been found practicable, the Grand Pier at Weston-super-Mare would have rivalled the famous one at Southend-on-Sea, so far as its length is concerned. The latter stretches out for a mile and a half and is the longest in the world. Its history goes back to within six years of the building of the old Chain Pier at Brighton. The first Southend Pier Act was passed in 1829, and 13 months later the opening ceremony was performed by the Lord Mayor of London.

The Pier has been extended several times. Originally it was built of wood, but in 1887–1889 it was reconstructed in iron. That was the time when the electric railway was added, but the track was not made a double one until 1931. The total length of the steamer berths on the south side of the pier extension is 540 ft., and is sufficient to accommodate two large pleasure steamers and four small ones. During the summer season, pleasure steamer services operate from here to and from Dundee, Calais, Ostend, and Boulogne. There are also services to and from the Port of London and the coastal resorts of Essex and Kent.

Like other similar structures, Southend Pier was taken over for military and naval use during the war. As H.M.S. *"Leigh"* it was the rendezvous for convoys approaching and leaving the Port of London, and between 1939 and 1945 no fewer than 85,000 ships met there.

Morecambe's older pier, the Central Pier, was built 81 years ago, and until the West End Pier was constructed it was known as the New Pier. It is supported by 292 iron piles, which go 8 ft. into the sand, clay, and rock, and have a 3 ft. 6 in. screw flange at the base.



Birnbeck Pier, at Weston-super-Mare, ends on an island.

The depth to which these piles have been sunk may seem small, but it may be noted that when six new ones were sunk and screwed in 1935, two of them broke in half when hard stone was met at a depth of only 6 ft. Altogether this pier contains 2½ miles of steel girders, and part of the superstructure is made of greenheart strips, the wood already mentioned as resistant to the attack of marine creatures. The superstructure, promenade decks, and buildings indeed are comparatively modern, for a fire in 1933 reduced the pier to the piles. It was rebuilt and opened again two years later.

Much work is needed to ensure that piers remain safe. Over 200 skilled workmen are employed in looking after Southend Pier, and they include a diver!

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"LAND OF THE COMMONWEALTH"

By R. K. and M. I. R. POLKINGHORNE (Harrap. 10/6)

The authors have produced a very timely and informative book that will give readers a good idea of what the British Commonwealth means. This has been described as the British Empire, a name that is apt to give a false impression by suggesting that it was built up by conquest, as the great empires of old were created. Nothing could be further from the truth. As pointed out in the book, by far the greater number of those who made the Commonwealth we know to-day were farmers, miners and others who left their homes in the British Isles to seek new lives and fortune overseas.

In simple straightforward style the authors describe the different British Commonwealth territories. In each case there is a brief historical note that places the land concerned in its proper position in the Commonwealth, and this is followed by informal pictures of the life, traditions, features and products of the territory. Emphasis is laid not so much on the great independent states such as Canada, Australia, New Zealand and South Africa, as on the colonies that are still learning how to rule themselves. These parts of the Commonwealth range from Nigeria, with more than 20 million people, to small islands such as the Falklands, with a population of little over 2,000; and the reader will find the stories of these fascinating, beginning with British West and East Africa, and continuing with Malaya, the West Indies and a host of scattered island colonies and outposts. India and Pakistan, the two new Dominions, are given a special chapter, and finally we have examples of British enterprise in brief accounts of the development of the great self-governing countries of the Commonwealth.

The book is splendidly illustrated by a large number of reproductions of photographs, with five maps, and it contains also a complete classified list of the various lands of the Commonwealth.

"BRITISH CARS 1950"

By PETER CHAMBERS (P-C Publications. 6/-)

Interest in motor cars is growing, and every reader of the "*M.M.*" will welcome the summary of British production in this field in 1950 that Mr. Chambers has compiled. The arrangement of the book is simple. The various makes are dealt with in alphabetical order and in each case illustrations are given of the cars themselves, with various styles of body, and descriptive notes. The pictures are excellent and are large enough to allow detail in general appearance to be picked out without difficulty.

An elaborate specification table gives full particulars of engines, gear ratios, tyre sizes, suspensions, dimensions, etc. for each of the products described, thus completing a compact and useful handbook.

"THE OBSERVER'S BOOK OF BRITISH FERNS"

By W. J. STOKOE (Warne. 5/- net)

Here is an interesting addition to the publisher's series of books for the pocket. It provides a comprehensive guide to 45 British species of ferns, explaining where each is to be found and giving full descriptions that will enable those who are interested to identify the majority of them. These accounts will stimulate lovers of ferns to widen their studies of these interesting plants.

Illustrations are of great importance in a book of this kind, and the reader will find here 30 coloured plates that will aid him greatly in recognising the different species, together with 19 black and white drawings.

"SPOILS FROM THE SEA"

By JAMES TAYLOR (Harrap. 12/6 net)

Mr. Taylor has told in this book the story of the life and adventures of diver J. E. Johnstone, a Liverpool man who learned his craft at the diving school at Invergordon in the early days of the 1914–1918 war. When the war was over Johnstone went to Australia, where he very quickly established a reputation as a lone worker on difficult and dangerous jobs. One of the most remarkable of these was his recovery of a large quantity of valuable cobalt ore from the depths of the sea off New Caledonia. The wreck had become so encrusted with coral rock that this had to be blown up with explosives before Johnstone could bring into play his underwater torch, a tool in the manipulation of which he became an expert. His recovery of the ore, in the course of which he had a desperate struggle with a giant groper, is vividly described, as are other diving tasks that he undertook in the southern seas.

Then came the war, and with it an exploit that made Johnstone's name famous throughout the world. This was the recovery of the gold of the "*Niagara*," sunk off the coast of the North Island of New Zealand. The ship lay at a depth of 438 ft., but Johnstone and his fellow divers, working with an ingenious diving bell, directed the operations of a grab that after many disappointments brought up massive ingots to the tune of more than £2,000,000. This was only one of Johnstone's wartime feats, many of which involved enormous risks, and all of these are well described in the book, every page of which is full of interest, with constant surprises and touches of humour.

As a record of a hazardous occupation, cheerfully pursued by one who loved adventure, the book is to be strongly recommended. It is illustrated by good maps and excellent photographs and drawings.

"THE LINE THAT JACK BUILT"

(Ian Allan. 1/6)

Most readers will be familiar at least with the name of the Romney, Hythe and Dymchurch Railway, a special article on which was included in the "*M.M.*" in November 1949. This remarkable miniature railway claims the title of the smallest public railway in the world, and is operated by locomotives that are miniature reproductions of real main line engines.

The "Jack" of the title of the present well-illustrated book is Captain J. E. P. Howey, the enthusiast who planned and built the Romney line and still directs its affairs. The volume is of handy size and is intended as a souvenir of a visit to the railway. It traces the origin and the development of the line, and describes its course from Hythe across Romney Marsh to Dungeness. Special attention is given to its locomotives and equipment, and one section describes a footplate experience on one of its miniature "Pacifics," while the R.H. & D. line's war service and subsequent developments make interesting reading. Leading dimensions of the locomotives and one or two facts of interest to visitors complete the tale.

"HOW TO RECOGNISE GARDEN FLOWERS"

By GEORGE H. GARSIDE, F.Inst.P.A. (Brockhampton Press Ltd. 3/6 net)

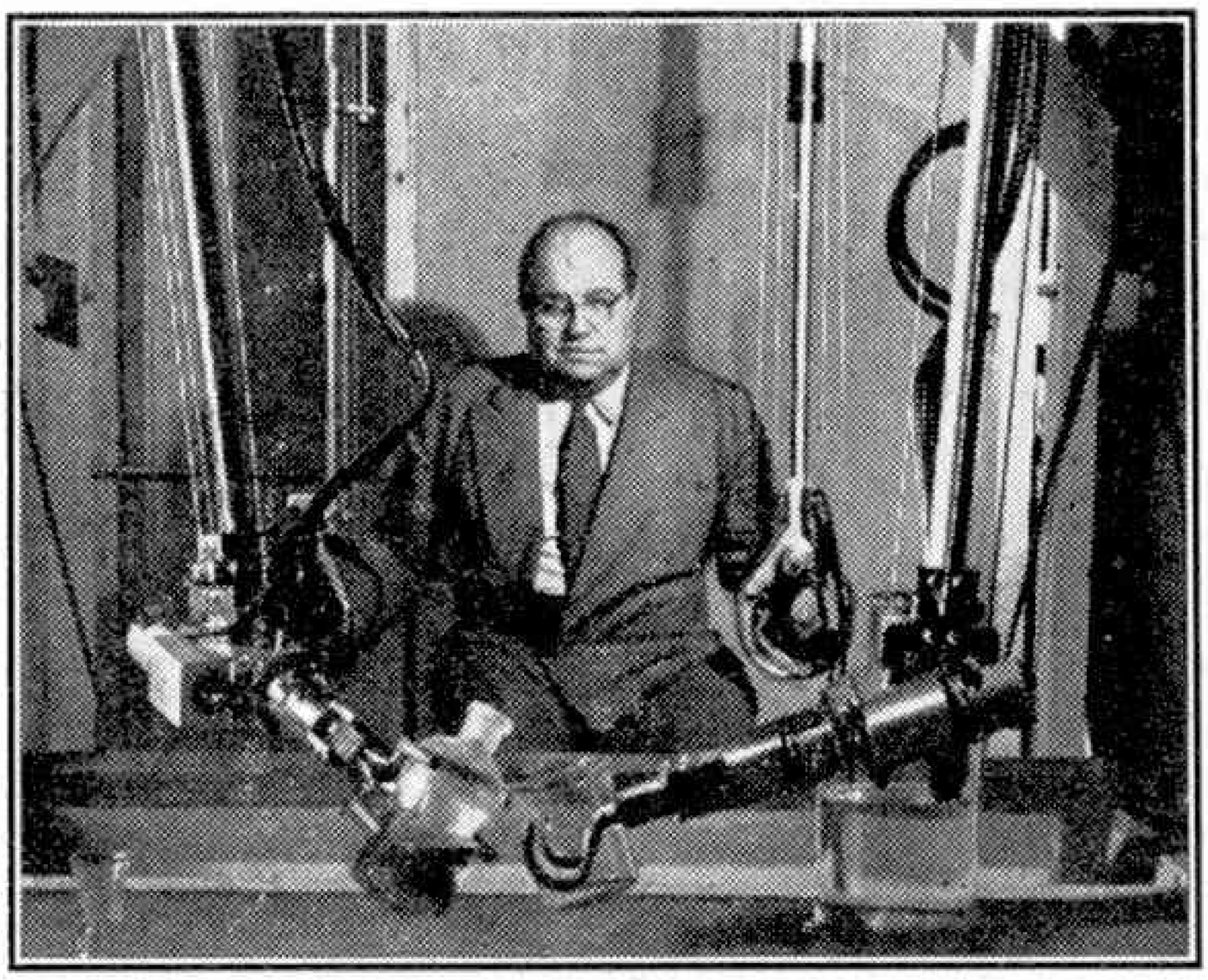
The inclusion in the "Young Naturalist" Series of a descriptive booklet on garden flowers is a very good idea, and younger readers who follow Mr. Garside round the garden will rapidly become familiar with the general run of flowering plants. Excellent coloured drawings by Will H. Stevens are accompanied by short but interesting notes, giving common names, countries of origin and similar details of the 101 different flowers dealt with.

Mechanical Hands

More Versatile than the Real Ones

By M. Lorant

MECHANICAL "hands" that in dangerous radioactive areas can perform delicate chemical experiments, operate machine tools, and do countless other tasks requiring great dexterity, were demonstrated recently for the first time by scientists of the American General Electric Company. The "hands" are the principal part of a device known as a "remote-controlled manipulator." They also proved they could perform such common jobs as slicing an orange, twirling spaghetti on a spoon, pouring liquids from one receptacle to another, lighting a cigarette, boring a hole, writing a name and even playing cards.



Mr. John Payne shows how the mechanical "hands" that he has developed can pour a liquid from a bottle into a beaker.

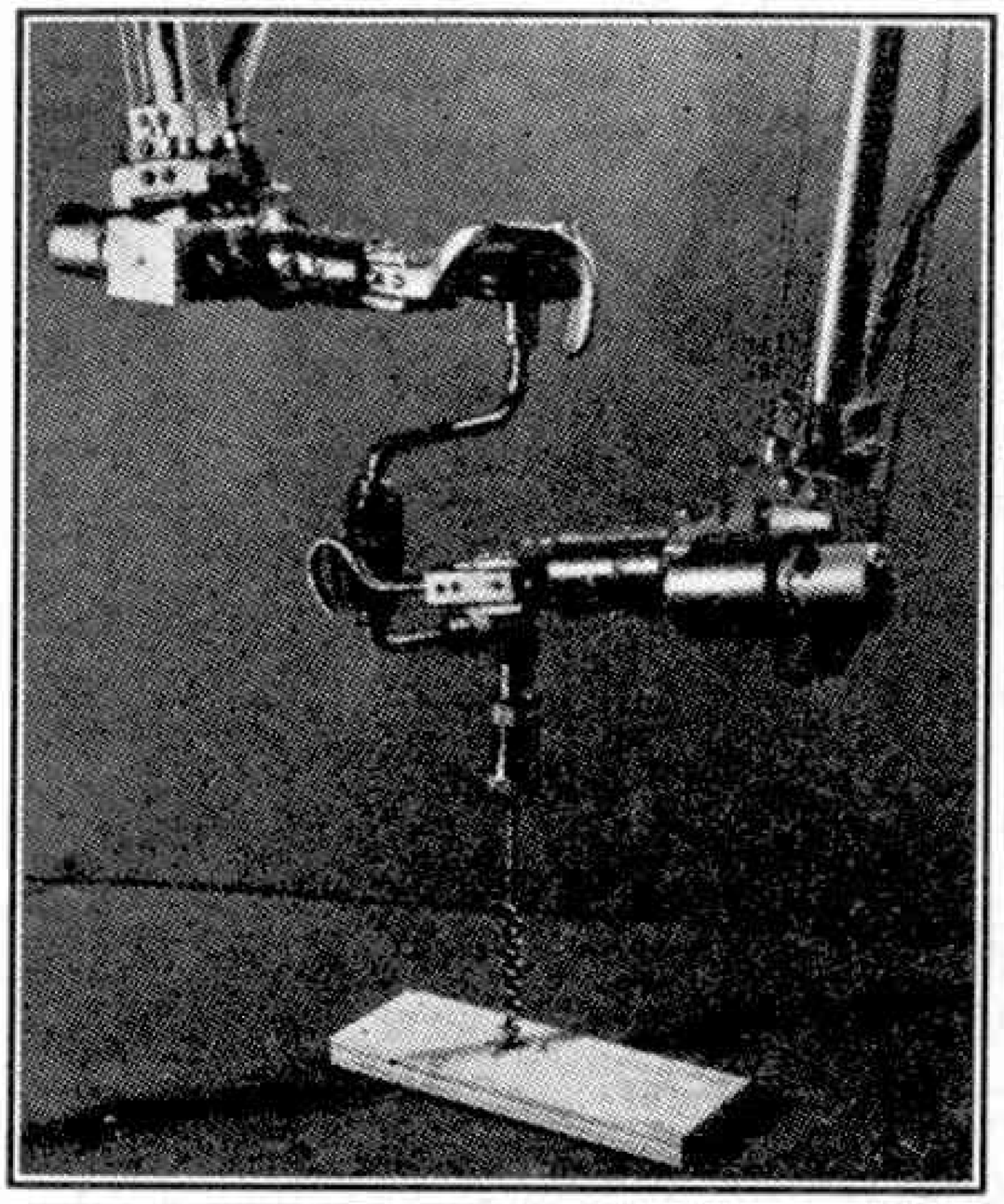
In actual use the "hands" would extend over a protective eight-foot-high wall into a radioactive area, but would be operated by remote control from a room outside the area, thus insuring against danger to their human operators from radiation.

The device was developed by John Payne of the General Electric Research Laboratory's Atomic Power Division, which operates the Knolls Atomic Power Laboratory at Schenectady for the American Atomic Energy Commission. He was assisted by Charles Hoffman. Following a visit to the Commission's Hanford Works, in the State of Washington, Mr. Payne said he was impressed with methods used for long-distance manipulation of special tools. Shortly after this he happened to see the feats performed with artificial hands by a World War II veteran who had lost his hands. It occurred to Mr. Payne that similar devices might be used in an all-purpose manipulator, and after more than a year's work he developed the revolutionary mechanical "hands."

The actual "hands" are similar to the double hooks used by handless men. They are at the lower ends of two arms that descend vertically from two horizontal shafts eight feet high across the top of the wall. Vertical arms come down from these at the other ends, and carry at the bottoms the handles with which the operator controls the device. He is seated, and views his mechanical hands, eight feet away, with the aid of binoculars and a four-mirror periscope which looks over the wall. His feet are on pedals that control the grasping action of the "hands."

The general motion of the hooks corresponds to that given the handles, as they are moved up or down, forward or backward, or from side to side. In addition the handles can be turned around three axes, by wrist movement, and this causes the hooks to do likewise. While most of the connections between handles and hooks are mechanical, the twisting of the wrists is done electrically. This permits the artificial hands to do something real ones cannot. They can be twisted around completely, any number of times, which is particularly useful when unscrewing a nut, for example.

It is also possible, from behind the wall, to change "hands." A large one can be used for heavy jobs. If the task requires a more delicate touch, the hand can be lowered into a holder and removed. Then the arm is moved to pick up and attach a smaller hand. Another hand that can



Drilling a hole with a brace and bit is an easy task for these mechanical hands.

be attached in a similar way is provided with a pair of snips for cutting sheet metal.

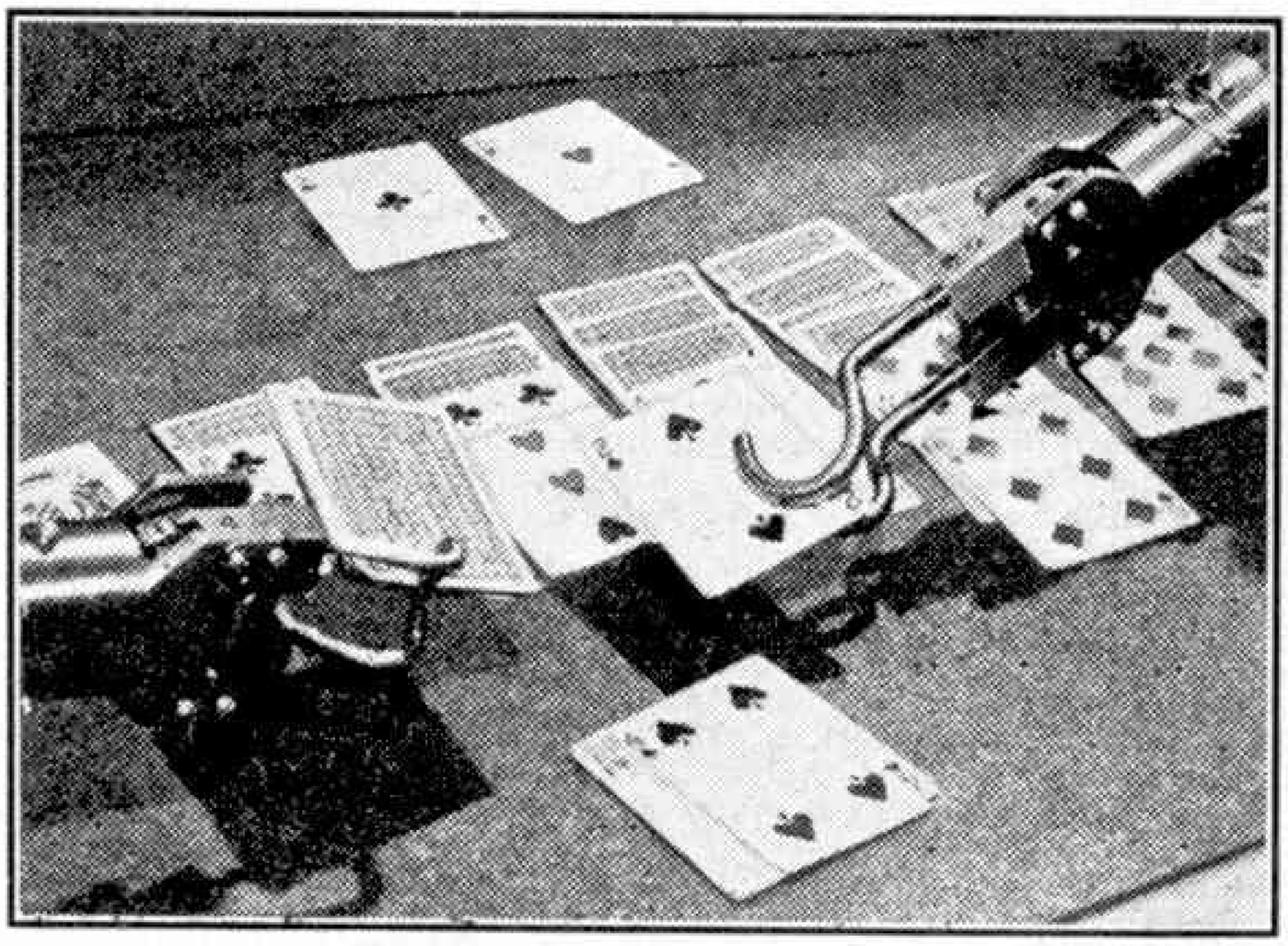
In describing the manipulator, Mr. Payne pointed out that he made every effort to give motions as natural as possible. Even without practice it is not difficult to do a simple task, such as removing the stopper from a bottle and pouring its contents into another bottle. With practice much more complicated things can be done, such as writing one's name and operating a drill press. In the latter case, the "hands" pick the proper-sized drill from the box, insert it in the chuck, place the work in position, turn on the switch and feed the drill.

In using pedals to close the "hands" for grasping, Mr. Payne says he was guided by the fact that most people are accustomed to the feel of a pedal in operating a car brake. The pedals themselves are of regular motor car type and standard car brake fluid and cylinders are used to transmit their force. It is possible to squeeze an object between the hooks much harder than the ordinary person can with his fingers. On the other hand, by a more gentle push on the pedal, a very light touch can be exerted, so as to break the shell of a hard-boiled egg without damaging the contents.

Experimenting with any radioactive material must be carried out with the very greatest care in order to avoid injury from the radiations that they give out. The need for caution is intensified when the new built-up elements are under examination, for these are intensely radioactive. Perhaps the best known of them is plutonium, one form of which was used in the preparation of the atomic bomb that devastated Nagasaki. This element was first made from neptunium, itself a synthetic element, and later a series of these elements was built up, the names given to them being americium, curium, berkelium and californium.

How strongly radioactive forms of these elements may be is shown by the fact that a very small amount of a curium compound dissolved in water actually glows, so great is the energy that the break up of its atoms releases. Plutonium is the only one that has been made on a large scale, but whether working in atomic power stations with this or with the special radioactive products made there, or in laboratories with the minute quantities of the heavy synthetic elements so far produced, it is necessary to take the greatest precautions to keep out of the danger zone in which the harmful radiations are present.

In actual work the experimenter is separated from his materials by a wall of lead, as this heavy metal absorbs the radiations, and some means of manipulating the apparatus from a distance is essential.



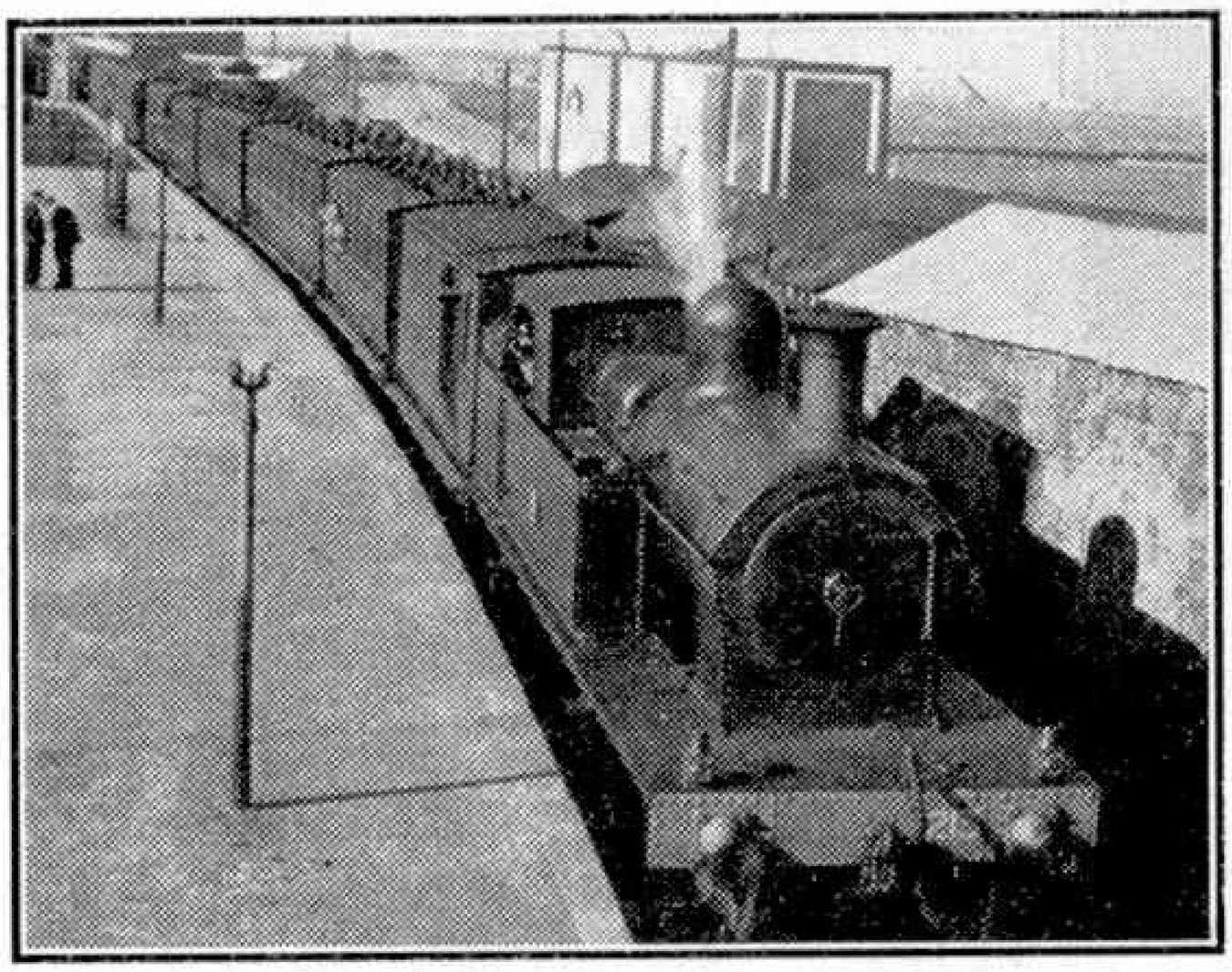
The mechanical hands can even be used for playing cards. Here is a game of solitaire in progress, with the operator in another room watching through mirrors.

Railway Notes

By R. A. H. Weight

Ulster Transport Developments

Further to the details contained in the article in the May "*M.M*" we learn that all rail services, both goods and passenger, have now been discontinued between Belfast and Comber. This means that the Belfast-Comber section of the old Belfast-Newcastle main line has closed down, and with it the branch line which connected Comber with the market town of Newtownards and the little seaport of Donaghadee. The only remaining lines of the old "County Down" railways which are in operation at the time of writing are the Belfast-Bangor branch and the Castlewellan-Newcastle line, the latter operated jointly by the Ulster Transport Authority and the G.N.R.(I).



The 3.20 p.m. train, Donaghadee to Belfast, before the closing of the Donaghadee line. The engine is Ulster Transport Authority No. 213, of the familiar "County Down" 4-4-2 tank type. Photograph by E. M. Patterson.

As a result, much of the old six-wheeled coaching stock of the County Down line has been seen in the sidings at Queen's Quay along with the partly-dismantled locomotives Nos 5 and 7. These are two of the three light Beyer-Peacock 2-4-2T engines. When these notes were prepared the one survivor of the class, No. 27, was still used occasionally but was not expected to last very long.

All former County Down locomotives have had 200 added to their original numbers and some of them have been re-painted in the black livery adopted by the Ulster Transport Authority, including two of the four "Baltic" tanks, Nos. 223 and 225.

Revised Locomotive Headcodes

A revised code of headlamp positions, subject to a few local exceptions, has been brought into use on British Railways, mainly with the object of standardising indications for various classes of freight train. This does not apply in the Southern Region, nor on London Transport lines operated as such, where the headlamps or discs carried on the engines indicate the route being traversed and not the class of train.

Express and ordinary passenger codes are unaltered, but the former, one lamp over each buffer, now includes express newspaper trains, snow plough going to clear the line, or Fire Brigade proceeding to a fire! Empty coaching stock trains are now included with parcels, fish, milk or express fully-braked freight ones, and they carry the indication, as seen on an approaching engine, one lamp over left-hand buffer and one in the centre of buffer beam. The similar and opposite position, with one lamp over right-hand buffer, indicates a through freight train with a small proportion of vacuum-fitted vehicles.

One lamp at foot of chimney and one over left buffer describes a fast freight or similar train, with not less than one-third of the wagons automatically braked and with vacuum pipes connected to the locomotive; the similar indication, but with the buffer lamp on the right-hand side, applies to a through goods or ballast train not fitted with continuous brake. A light engine carries one lamp in centre of buffer beam. Slow or stopping goods indications are much the same as hitherto.

Each headlamp position has a letter indication which can be used to describe a type of train, such as "Express Fish, class C." "A" is the express passenger, "B" ordinary passenger, and so on.

More Embellishments for the "Royal Scot"

The former L.M.S. Company did not make much use of special locomotive headboards for named trains such as those familiar on the erstwhile L.N.E.R. An exception has now been made by the L.M. Region in the case of the "*Royal Scot*" express, which during the summer months makes no passenger call between London (Euston) and Glasgow (Central). A distinctive engine headboard, which we illustrate, embodies a Scottish lion on a yellow shield above the name. The roof boards on the coaches are painted with a Royal Stuart tartan background. A "Royal Scot" emblem appears on the menu cards supplied in the restaurant cars, and also on the stewards' jackets.

A special sign incorporating the Scottish Lion device in the form of an arch has been erected at Euston, as well as at Glasgow (Central), over the entrance to the main departure platforms whence the "Royal Scot" or its predecessors has commenced its journeys at 10.0 a.m. for so long.

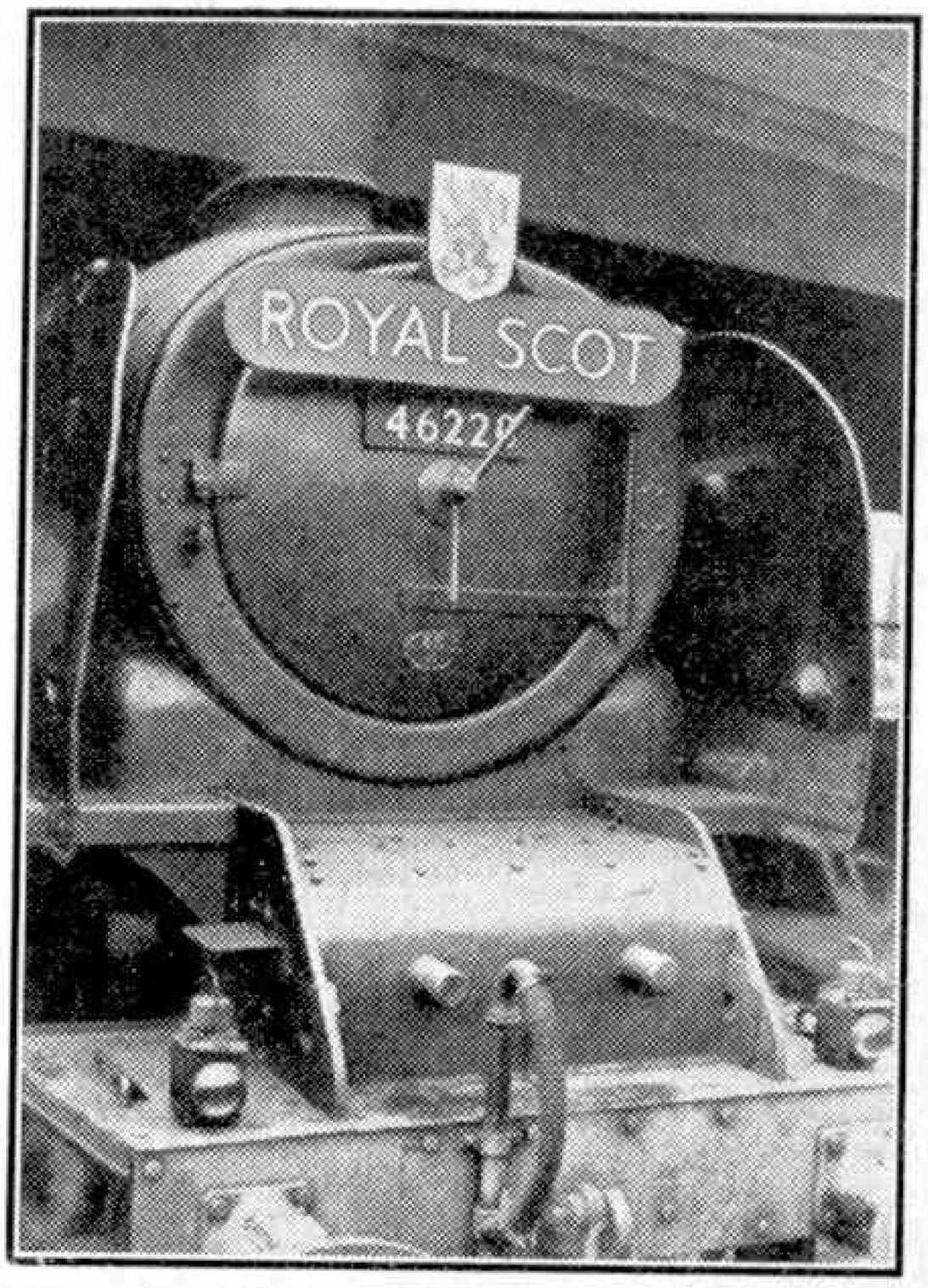
Western Tidings

Completing a batch of "Hall" class 4-6-0s, No. 7919 "*Runter Hall*" was completed in May last and allocated to Reading, 81D. Continuing "Castle" construction, Nos. 7028-32 are named respectively "*Cadbury Castle*," "*Clun Castle*," "*Cranbrook Castle*," "*Cromwell's Castle*," and "*Denbigh Castle*."

We are informed that Princess Elizabeth will make a tour of the Works at Swindon in October next when there will be a ceremony at which she will name a locomotive after that town. This will be part of the Jubilee celebrations of the Borough, which owes its growth to the establishment of the G.W.R. Works there just over 100 years ago. The new engine concerned may be the last of the "Castle" type to be constructed and will carry the Swindon coat of arms, included in which is a reproduction of the G.W.R. express 4-2-2 locomotive "*White Horse*," built there in 1891.

More 0-6-0Ts of the 16XX, 84XX and 94XX series continue to be placed in service. Three elderly Webb 0-6-0s of L.N.W.R. origin, now numbered 8108, 8182 and 8236 respectively, and the small 0-4-2T No. 1 "*Gazelle*," have been taken into stock from the late Shropshire and Montgomeryshire Light Railway.

Readers report that a "Saint" 4-6-0 usually hauls the 4.15 p.m. Swindon-Paddington passenger train, returning with milk empties; also that one of the eight remaining "Bulldog" 4-4-0s worked in and out of Paddington on June 29th last. W.R. 2-6-0s, or "Manor" 4-6-0s run through to and from Redhill



The engine of "The Royal Scot," L.M.R. No. 46220 "Coronation," bearing the special headboard displaying the Scottish Lion above the train name. British Railways Official Photograph.

on Saturdays in summer in connection with the operation of the through Midlands-Kent-Sussex services. They thus traverse Southern metals between Reading and Redhill by way of Guildford, as does a 61XX 2-6-2T on ordinary weekdays.

The Gas-Turbine Locomotive at Work

No. 18000, built in Switzerland and recently illustrated and described in our pages, gradually developed its trial runs during last spring following various clearance tests and experimental journeys, during which there were some "teething troubles." This novel locomotive hauled the 9.0 a.m. Swindon-Paddington, returning usually at 1.18 p.m. In May it was transferred to Old Oak Common Shed, Paddington, for more ambitious work, running the 3.30 p.m. West of England express from Paddington to Plymouth and returning with the 7.15 a.m. up next day for three weeks. With moderate loads, No. 18000 displayed remarkable powers of acceleration from starts and notable power uphill. The 3.30 p.m. has the quickest booking on the route—142¾ miles Paddington to Taunton stop in 148 min.

On the inaugural run two severe slowings before Reading caused a 6-min. late passing of the latter junction. A fine ascent followed up the Kennet valley with an average of 60 m.p.h. to Bedwyn, followed by a mean speed of 71.4 down to Heywood Road, Westbury, with a maximum of 76½, so winning back to schedule. Here one coach was slipped, reducing the total load to about 340 tons. Lively travel thenceforward brought the express into Taunton 3½ min. early, with a net time of no more than 138 min. for the 142¾ miles, comparable with a quite good "King" or "Castle" performance. It may be, however, that the gas turbine locomotive is not the equal of the former when it comes to mounting the stiff S. Devon banks with maximum loads allowed for the big 4-6-0s. The maximum tractive effort of No. 18000 is given as 31,500 lb., which is considerably below that of "Kings" or large "Pacifics."

Subsequently a fast run was made from Swindon to Paddington with a seven-coach train including dynamometer car.

London Midland Regional News

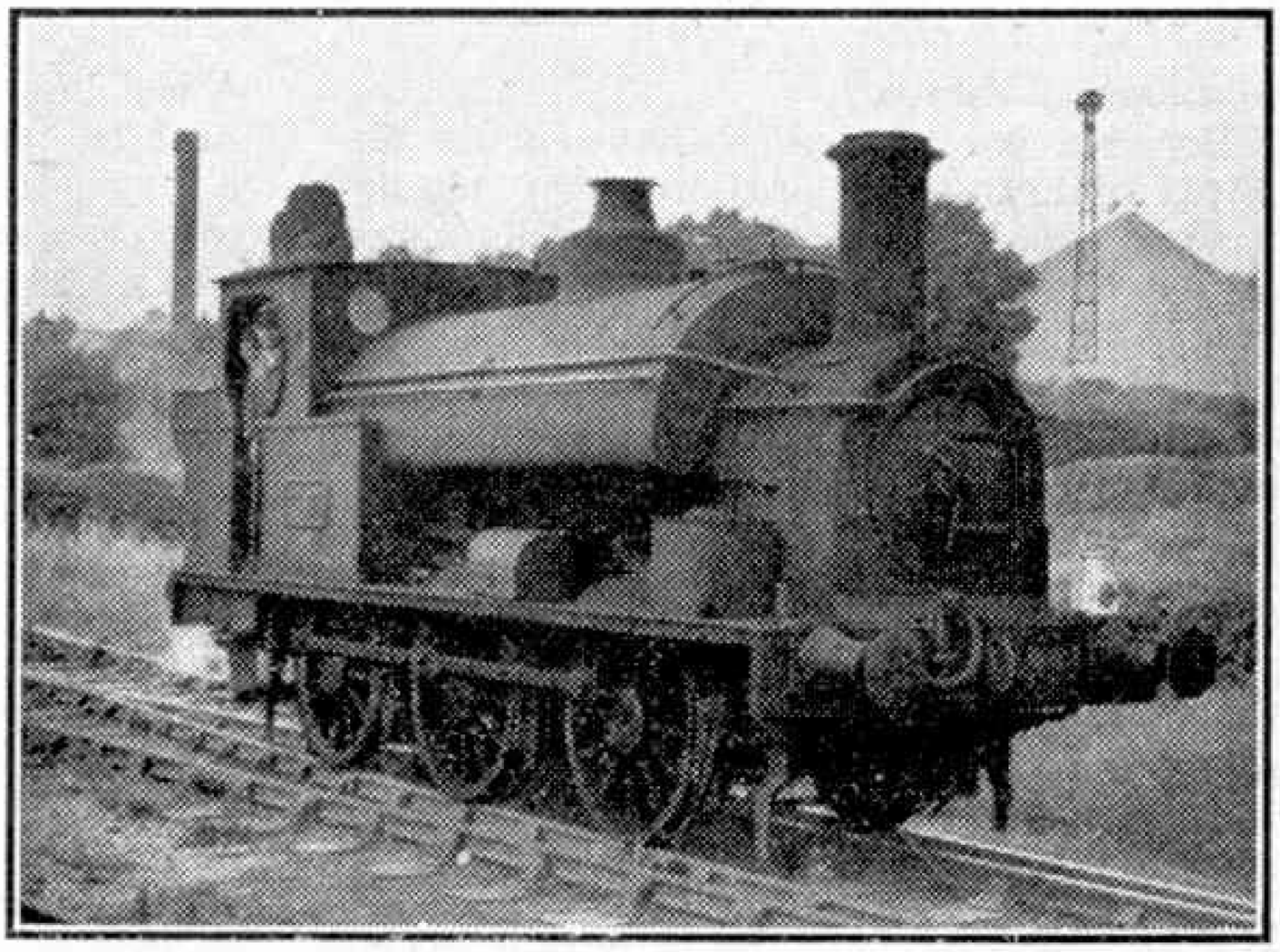
New engines recently placed in traffic include class "2" 2-6-0 No. 46454, allocated to 17A, Derby; and Nos. 46455-9, 5A, Crewe. The batch immediately following were for the Scottish Region. Other new engines are class "4" 2-6-4Ts Nos. 42142-3 and 42145, 20C, Royston, Yorks., and No. 42144, 20H, Lancaster; class "5" 4-6-0 mixed traffic, with roller bearings on all axles, Nos. 44678-82, 5A, Crewe North. No. 44683 had been completed by 1st July. Class "2" 2-6-2Ts Nos. 41260-1 are shedded at 28B, Fleetwood.

An 827 h.p. diesel-electric locomotive has also been constructed. It is No. 10800, understood to be allocated to the Rugby district.

Nos. 46100 "*Royal Scot*" and 46155 "*The Lancer*" are among the latest conversions to the "6P" standard, with taper boiler and double chimney, painted dark green. On account of this modification, the former can no longer carry in front the bell presented by the Canadian Pacific Railway in 1933 when that locomotive was on tour in the U.S.A. and Canada. The trophy has been sent to the York Railway Museum, along with the nameplate previously fixed to the smoke-box door.

The Trafford Park (Manchester) Motive Power District having ceased to exist as a separate entity, the sheds there have been included with other Districts in the neighbourhood; Trafford Park becoming 9E, Warrington 8F, Southport 27E, for example. Some other changes in shed numbering have also taken place.

Recent observations included unrebuilt "Scots" Nos. 46158 and 46165, and reboilered "Patriot" No. 45521, "*Rhyl*," which has small smoke deflectors, painted dark green. There are still a few "Jubilee" and perhaps other ex-L.M.S. locomotives painted red, although renumbered with B.R. style figures.



A quaint little saddle-tank, No. 1331 of the Western Region, withdrawn recently. It was built in 1877 for the Whitland and Cardigan Railway. It is shown at Porthywaen quarries in 1947. Photograph by S. W. Baker.

Blimps Over the Sea

By John W. R. Taylor

AIRSHIPS always seem to have about them an air of mystery and romance which is completely absent in an aeroplane. Perhaps it is because the really big ones were able to carry so many people for such great distances, silently and majestically, gliding through the sky like great silver ships. Or perhaps because they seem to belong to another age, for by comparison aeroplanes are symbolic of our time—noisy, hurrying, essentially commercial things.

Mooring a Goodyear blimp to a portable mooring mast mounted on a bus. The bus carries a crew of 18 men and houses complete facilities for field repairs.

Because we no longer have giant airships spanning the Atlantic on regular services, it is easy to forget their past achievements. A British airship, the R.34, carried 32 men on the first two-way journey over the North Atlantic less than a month after Alcock and Whitten Brown's historic first non-stop crossing in a "Vimy" bomber. In 1936 the fine old *"Graf Zeppelin"* was withdrawn from service after making more than 100 passenger-carrying flights across the South Atlantic. In all she had carried well over 10,500 passengers in eight years of operation, without need for any special repairs in all that time.

The year the *"Graf Zeppelin"* retired, her superb successor the *"Hindenburg"* began the world's first regular passenger service across the North Atlantic from Frankfurt to Lakehurst, New Jersey, proving so popular that extra cabins had to be installed. In fact, on her eighth westbound trip she carried 72 passengers and a crew of 55—a transatlantic payload that no aeroplane has yet rivalled.

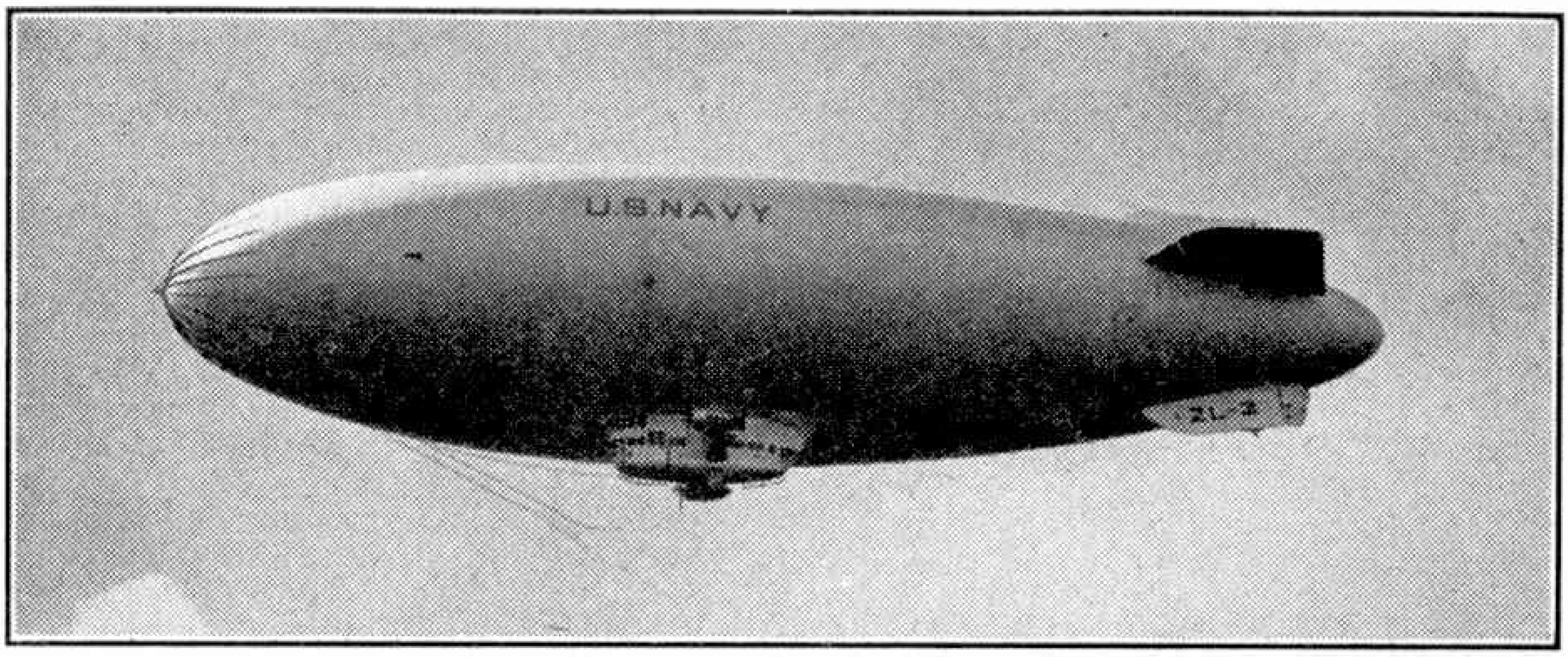
Unfortunately she was lost in 1937 in a tragic accident that would never have occurred if her operators had been able to fill her with helium gas instead of highly inflammable hydrogen. And that was the end of transatlantic airship services.

Most people seem to be under the impression that it was also the end of airships as a whole, but nothing could be further from the truth. As a matter of fact, airships belonging to the U.S. Navy played as active a part in the second World War as their predecessors, the German Zeppelins, did from 1914 to 1918. Admittedly they were used for less spectacular duties, such as anti-submarine patrol and air-sea rescue, but they left little doubt of their efficiency and usefulness.

The twelve months immediately following America's entry into the war were grim ones for the Allied merchant navies, 454 ships being sunk in the American Atlantic area alone. Every aircraft that could possibly stagger over the sea was pressed into service to hunt and attack the U-boats, from little two-seat personal 'planes to heavy bombers . . . . and the U.S. Navy's four operational airships.

Their combined efforts, in co-operation with surface vessels, brought U-boat sinkings in the U.S. area down to 65 in 1943, by the end of which year the number of airships in service had risen to 53. Next year, when 68 airships were available, only eight merchant ships were sunk, and in 1945, three ships.

The U.S. Navy would be last to claim that its airships played the major part in this victory; but it is significant that no U-boat ever made a successful attack on a ship when one of them was in the vicinity.



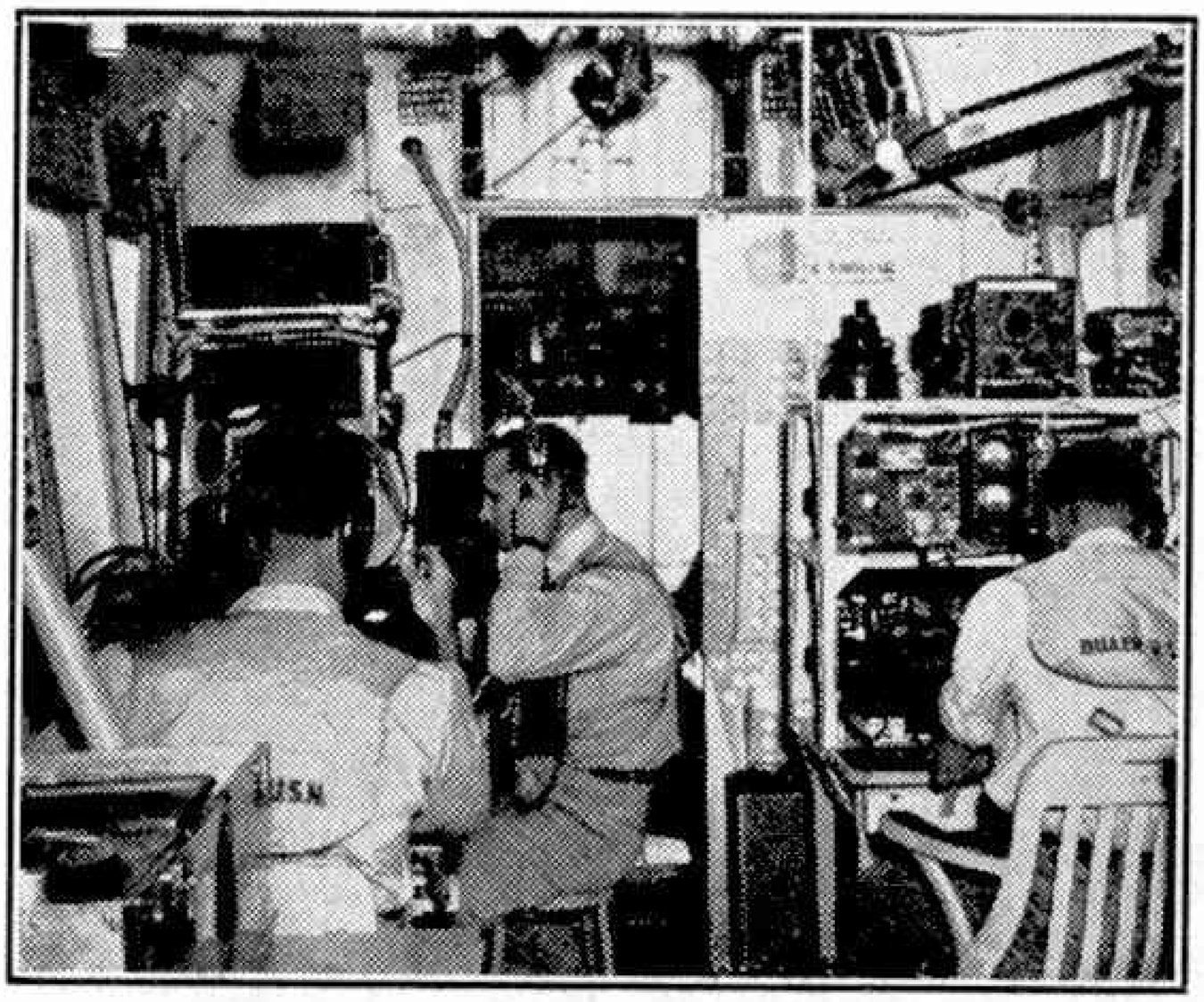
The K-type airship, shown here, is the U.S. standard blimp for anti-submarine warfare. Official U.S. Department of Defence photograph.

Even in cold figures, the airships' achievements were impressive. In all they made 35,000 operational sorties over the Atlantic and 20,300 over the Pacific, in a total of more than half a million flying hours. During that time they escorted 89,000 surface craft without the loss of a single vessel, despite the fact that 50,000 of them were sailing in areas where U-boats were known to be operating. In addition they made about 80 rescue missions, on one occasion snatching the survivors of an aeroplane crash from a swampy Brazilian jungle.

Nor were their operations restricted to the New World, for in the Spring of 1944 No. 14 Squadron was flown over to the Mediterranean, via the Azores to patrol the North African coast and the Straits of Gibraltar. Its airships worked within 60 miles of the battlefront, from normal Service airfields, and from the time they arrived no more U-boats passed through the Straits.

There was no longer any doubt of their value, and so it is hardly surprising that when the enemy began sending his new "Schnorkel" equipped U-boats to hunting grounds near the British Isles in 1945, the R.A.F. asked the U.S. Navy to send over some airships to help protect the Western Approaches.

The war ended before they arrived, but post-war exercises have proved conclusively that airship crews have a far better chance of spotting the tiny wake of a "Schnorkelling" submarine than has the pilot of a fast-moving aeroplane. Their importance therefore should not be underestimated, for we must never forget that the U-boat menace very nearly brought Britain to her knees in two World Wars and could well do so in a third, as the submarine of to-day is more formidable than ever. Its "Schnorkel" breathing tube enables it to travel submerged almost indefinitely at comparatively high speed, and new forms of torpedo and submarine-launched guided missiles could well make it the world's most dangerous weapon. It is no coincidence that our only possible future enemy has several hundred submarines—



The nerve centre of the airship. The equipment here includes radar, magnetic airborne detection and sono buoy listening devices. Official U.S. Department of Defence photograph.

far more than the Germans ever had operational at one time.

To counter the growing menace of the submarine, the U.S. Navy have worked out completely new combat techniques, involving the use of combined forces of

The "Ranger" was operated by the U.S. Navy during the Second World War. On the right is a portable mooring mast.

carriers, aeroplanes and airships. The last would be used chiefly to search out the submarines by radar and then pin-point them by dropping radio sono-buoys, after which the surface vessels and aeroplanes could finish the job with depth charges, rockets, hedgehogs and torpedoes. More precise details of how it would all work must, of course, remain secret, but there is no reason why convoys should not be under effective airship escort all the way across the Atlantic.

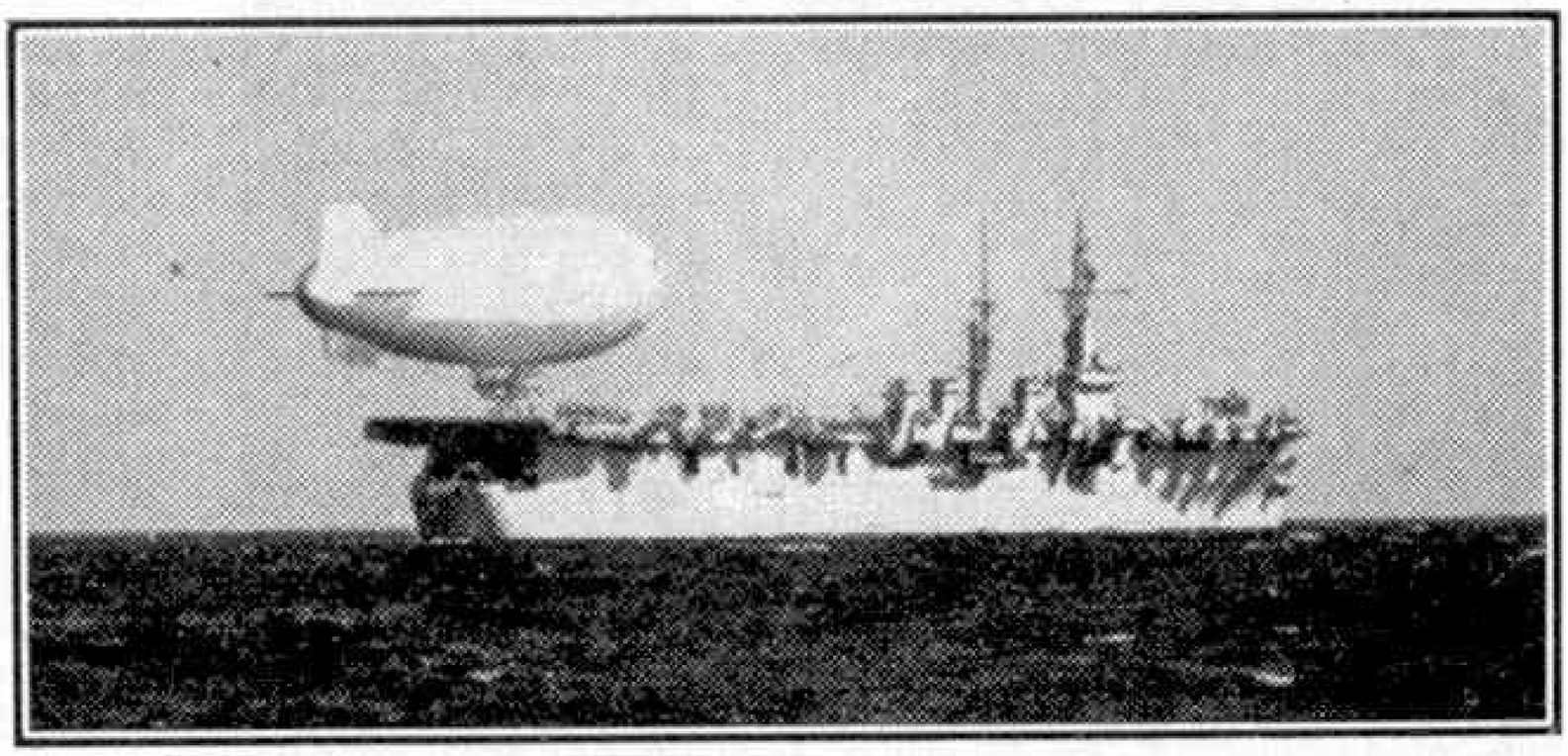
To this end the Goodyear Aircraft Corporation of Akron, Ohio, are developing a brand-new class of airship, designated the Type N, each of which will be 324 ft. long, with a volume of 825,000 cu ft. Like their wartime predecessors, all of which were built by Goodyear, they will be non-rigid "blimps." This means that their outside envelope is the actual gas container, in contrast with the bigger Zeppelins and airships, whose envelope was formed over a metallic structure, the gas being contained in a number of separate "bags" inside.

An interesting fact is that these U.S. Navy blimps are seldom operated strictly as lighter-than-air machines. The wartime K type airships, for instance, which had a volume of some 450,000 cu. ft., sometimes took off as much as 4,000 lb. "heavy." The airship's ability to do this was proved by the late Captain Boothby, R.N., in August 1916. He fitted the British coastal airship C11 with a wheeled undercarriage and then took off 200 lb. heavy by taxying along the ground until airflow over the envelope produced sufficient lift to negative the heaviness, and the C.11 became airborne. The reason for this is quite apparent, as the shape of an airship is very like a wing aerofoil section, and produces lift in exactly the same way.

Because of this, airships can take off with much greater loads than they would otherwise be able to lift. In the case of military blimps, this can comprise extra fuel to extend their patrols or additional operational equipment to increase their effectiveness.

With their ability to fly slowly and in perfect safety in bad weather or at night, the fact that they are not tied to elaborate airfields in the same way as an aeroplane, and their unrivalled degree of serviceability, it is difficult to dispute the airships' place in a modern anti-submarine force.

Furthermore, they rival the helicopter for rescue work as they can hover easily and have the added advantage of a very long range—one of the helicopter's worst deficiencies. (*Continued on page 428*)



A blimp moored to an aircraft carrier of an anti-submarine task force. Official U.S. Department of Defence photograph.

THE graceful vessel shown in dry dock on our cover is the Shaw Savill liner "*Ceramic*," built by Cammell Laird and Co. Ltd., Birkenhead, and launched on 30th December 1947. This passenger and cargo liner was designed to meet the requirements of the Australian and New Zealand refrigerated cargo trade, and is used as circumstances require on any of the routes covered by the Shaw Savill Line, via Panama, via Cape or via Suez Canal. On her maiden voyage she sailed from Liverpool to New Zealand via Curacao and the Panama Canal, and her homeward voyage followed the same route.

The "*Ceramic*" was the third of four sister ships to be built for the Shaw Savill Line. The first two were the "*Corinthic*" and the "*Athenic*." The "*Athenic*" was actually taking on passengers at the Liverpool Landing Stage at the same time as the "*Ceramic*" when this vessel was about to commence her maiden voyage, and the illustration on this page shows the liners together. The two sailed at about the same time on 16th December 1948, but a few hours after starting they parted company, as the route of the "*Athenic*" to Australia took her round the Cape of Good Hope.

The illustration at the head of the page shows the "Athenic" and the "Ceramic," passenger cargo liners of the Shaw Savill Line, alongside the landing stage at Liverpool, when the "Ceramic" was preparing for her maiden voyage. Photograph by courtesy of Shaw Savill and Albion Co. Limited.

The fourth of these sister ships is the "*Gothic*," built by Swan, Hunter, and Wigham Richardson Ltd. at Wallsend-on-Tyne. She also started her maiden voyage from Liverpool, just before Christmas of 1948, and followed the same route as the "*Athenic*."

The "*Ceramic*" is a twin screw passenger vessel of about 15,900 tons gross. Her length overall is 561 ft., and she has a breadth of 72 ft. She has a raked stem of round plate construction and a stern of the cruiser type, with a semi-balanced streamlined double plate rudder. Welding has been used extensively in her construction. The total refrigerated cargo capacity is 523,000 cu. ft., which includes 117,000 cu. ft. of chilled capacity, and there is a space of 169,000 cu. ft. for general cargo. Each of the large hatches is provided with derricks to lift 5, 7 and 12 tons, and at the foremast there is a 50 ton derrick for heavy lifts. These derricks are operated by electrically driven 5-ton winches.

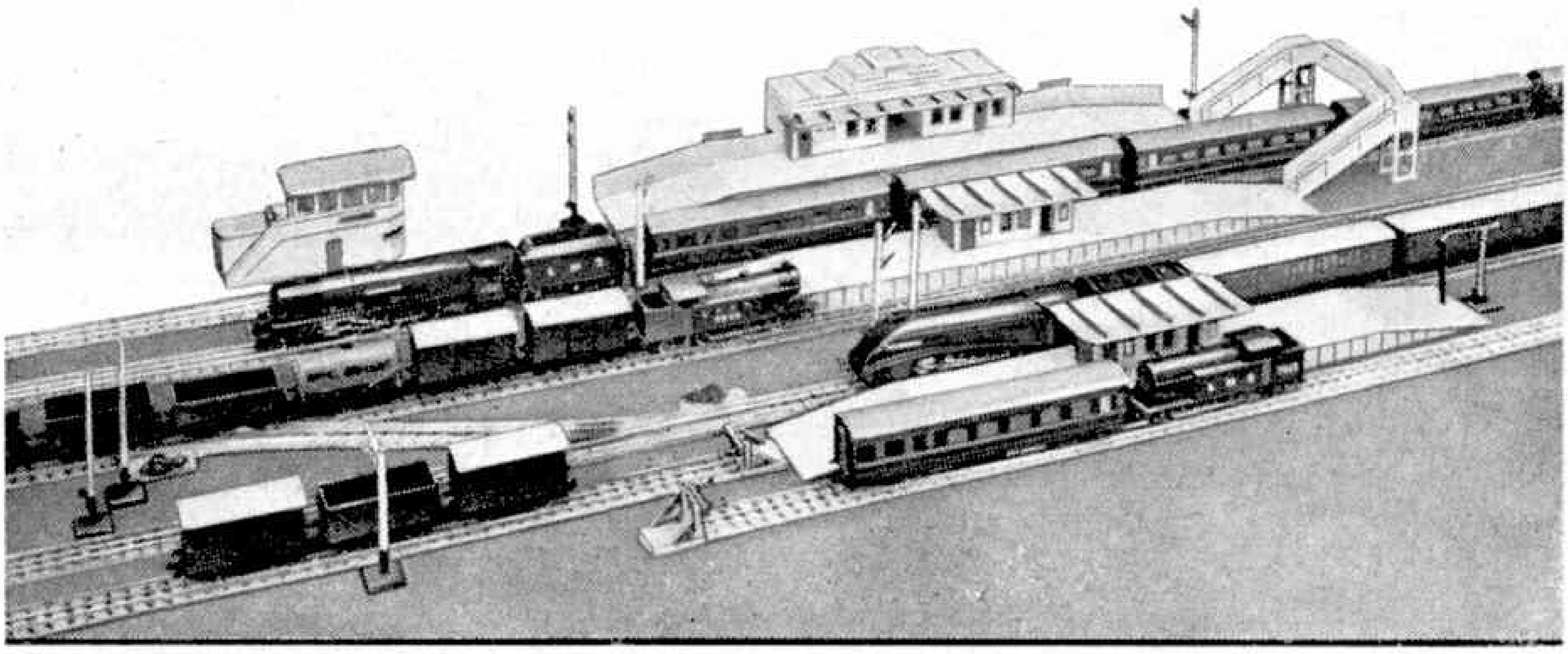
The greatest number of passengers that can be carried is 85. The accommodation comprises a private suite, 38 single cabins and 14 double cabins, with 17 Pullman berths when required, and there are also a Lounge, Smoke Room, Dining Saloon and Veranda, with a Children's Room and a Hairdressing Saloon. The cargo hatches on the Boat and Games Decks are of the flush type in order to provide ample spaces for the recreation of passengers.

The main propelling machinery consists of two sets of geared turbines capable of developing a maximum power in service of 18,400 s.h.p. at 125 propeller revolutions a minute. Each set has a high pressure and an intermediate pressure impulse turbine driving the main gear wheel through double reduction gearing. The high and intermediate pressure astern turbines are of the impulse type and develop 70 per cent. of the ahead power. The propellers are of the four bladed type, made of manganese bronze, and the economical service speed is 17 knots.

Steam for the turbines is supplied by two Foster Wheeler controlled superheat generators, built by Cammell Laird and Co. Ltd., at a pressure of 500 lb. per sq. in. and a temperature of 800 deg. F. Oil fuel is used, on the Wallsend-Howden pressure system under balanced draught.

Our cover shows the "*Ceramic*" in dry dock at the yard of R. and H. Green and Silley Weir Ltd., to whom we are indebted for the photograph on which it is based, and for much help in the preparation of the article.

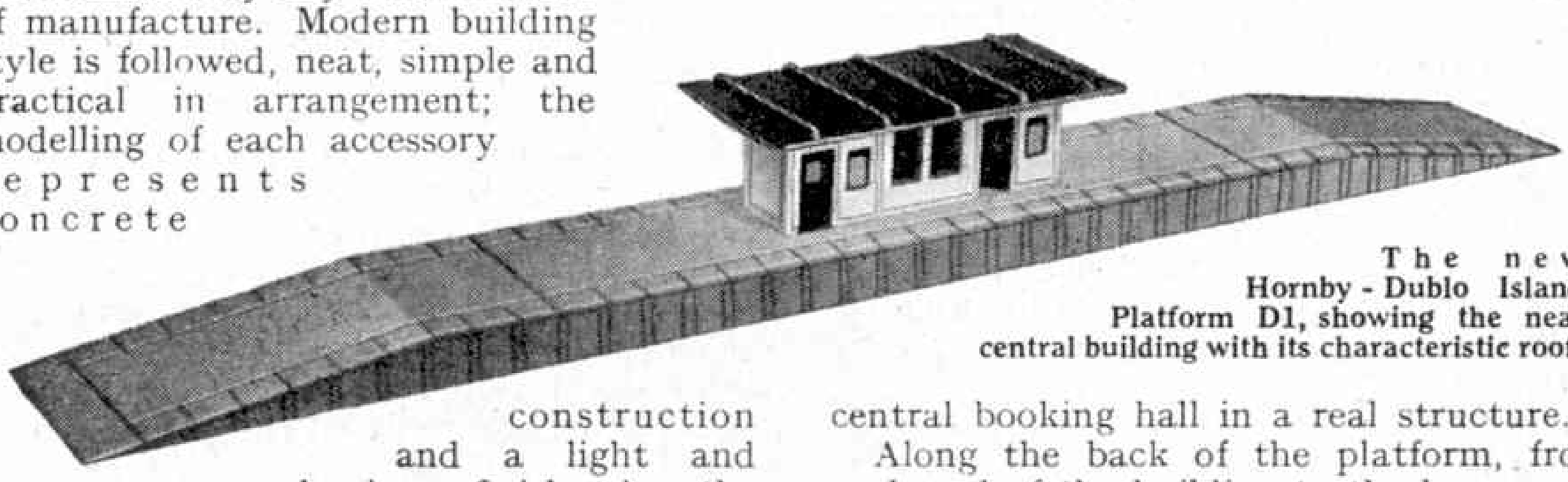
New Hornby-Dublo Accessories



THIS month we are able to give details of some splendid new accessories now available for Hornby-Dublo railways. These are among the finest models of their kind that have yet been produced, and they form a vast improvement on the corresponding items included in the Hornby-Dublo range in pre-war days. The new accessories are respectively the Through Station, the Island Platform, and the Signal Cabin.

There are several features common to each of the new accessories. In the first place they are thoroughly modern in design and style of finish, and each is well in keeping with the other items of the Hornby-Dublo range. Each is made up of high-grade precision die-castings, a form of construction that gives a degree of neatness and solidity that is practically unobtainable by any other method of manufacture. Modern building style is followed, neat, simple and practical in arrangement; the modelling of each accessory represents concrete construction and a light and pleasing finish is the result. The general effect is shown in the accompanying illustrations.

Taking first the Through Station, the main or centre section carries the station building with its various rooms and offices, doorways and window frames being attractively modelled in relief. To protect the passengers on the platform in bad weather a flat awning extends along the front of the building. Unlike the style followed with many miniature stations, the building is not simply planted on the platform with the rear of the station left to look after itself. Instead the building is extended backward so that an attractive and realistic approach at ground level is afforded. The entrance is central, a neat flight of steps leading up into what would be the main hall of a real station, and then out on to the platform itself. Further windows and doorways suggest different departments at ground level, and the entrance from the roadway is completed by a small curved awning. The roof rises in the form of a skylight which would provide ventilation and lighting for the central booking hall in a real structure.



The new Hornby - Dublo Island Platform D1, showing the neat central building with its characteristic roof.

Along the back of the platform, from each end of the building to the lower ends of the platform ramps, runs a wall modelled to represent concrete. On each ramp section the wall carries a station name-board. Suitable printed labels for affixing to the nameboards are obtainable separately in a packet entitled "Station Names."

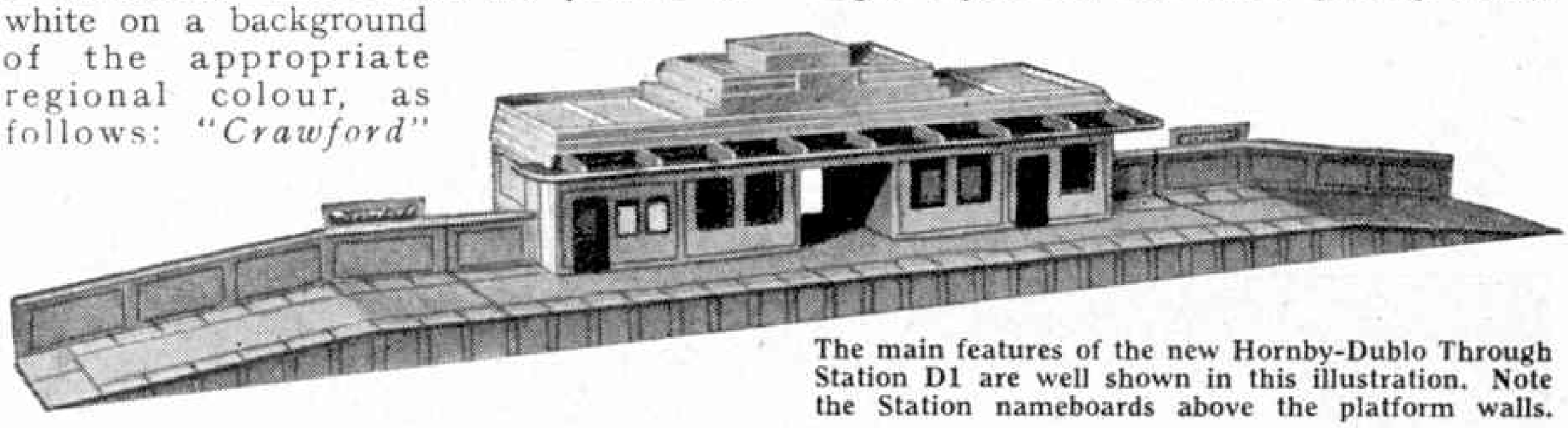
This packet contains labels offering a choice of station names according to the region in which the Hornby-Dublo owner is interested. The names are printed in white on a background of the appropriate regional colour, as follows: *"Crawford"* (Scottish Region) light blue; *"Lichfield"* (L.M. Region) red; *"Newark"* (Eastern Region) dark blue; *"Overton"* (Southern Region) green; and *"Westbury"* (Western Region) brown. The name is printed with a dotted line surround, and if each label is trimmed carefully to this line it will fit exactly in the space intended for it on the station board. Seccotine or cellulose adhesive should be used, the back of the label being evenly covered with a thin film.

Similar general features characterise the Island Platform. The central building is simple, and it gives an impression of neat and comfortable accommodation on a small scale. Windows, doorways and other features are cast in relief, and a pleasing detail is the inclusion of small boards on the sides, of the type that are usually used for the display of timesheets. The roof is of the usual flat concrete type, with an attractive upward flare where it is extended to form an awning on each side, reaching practically the whole width of the platform.

The Island Platform can form a very effective stopping place on a small Hornby-Dublo railway. Either on the main line or on a branch line on a larger system it is self-sufficient. Quite a busy scene can be built up with an Island Platform with one of the new Signal Cabins, a Water Crane and one or two Signals.

In addition to its use alone, the Island Platform is ideal for use in conjunction with the Through Station to build up a two-road or three-road station of the more important kind. As the platform lengths are the same, the different sides of the complete station match each other very well. A good example of this combined use is shown in the upper illustration on the previous page.

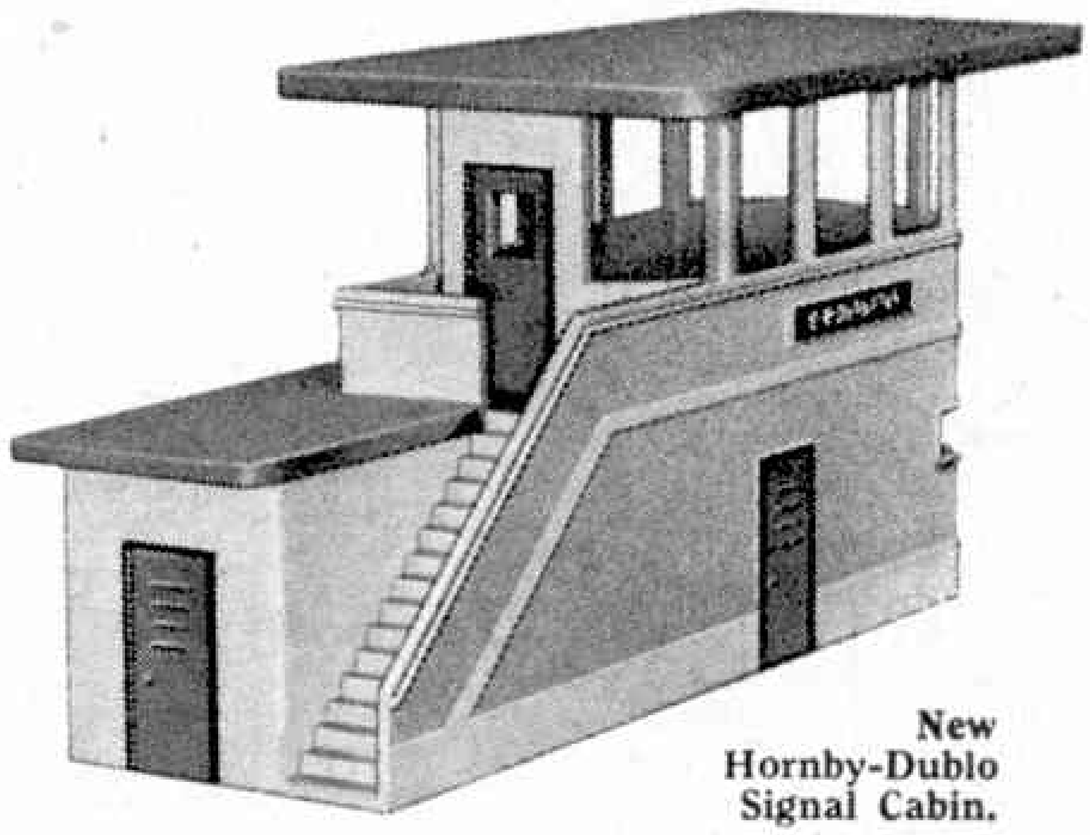
The platform faces of the Stations are modelled to show the vertical pedestals and intervening slabs characteristic of pre-cast concrete platform construction. The surface of the platforms along the edges represents the usual paving found on the real structures, neatly finished off with a broad white line.



The main features of the new Hornby-Dublo Through Station D1 are well shown in this illustration. Note the Station nameboards above the platform walls.

A useful feature of both the Through Station and of the Island Platform is that each has been made equal in total length to two standard EDB1 Straight Rails. This makes it easy for the Hornby-Dublo owner to determine what rail space is required to accommodate his station or platform.

Both the Through Station and Island Platform consist of a main central unit equal in length to one standard EDB1 Straight Rail. This is flanked by two end units each equal in length to a standard EDB1½ Straight Half Rail, which incorporate the usual sloping ramp that forms the ends of railway platforms. The joints between the sections do not occur exactly at the top of the sloping ramp. Instead, each end section includes a short length of level platform so that the end sections really look as if they are part of the Station or Platform, instead of consisting merely of ramps "tacked on" at each end.

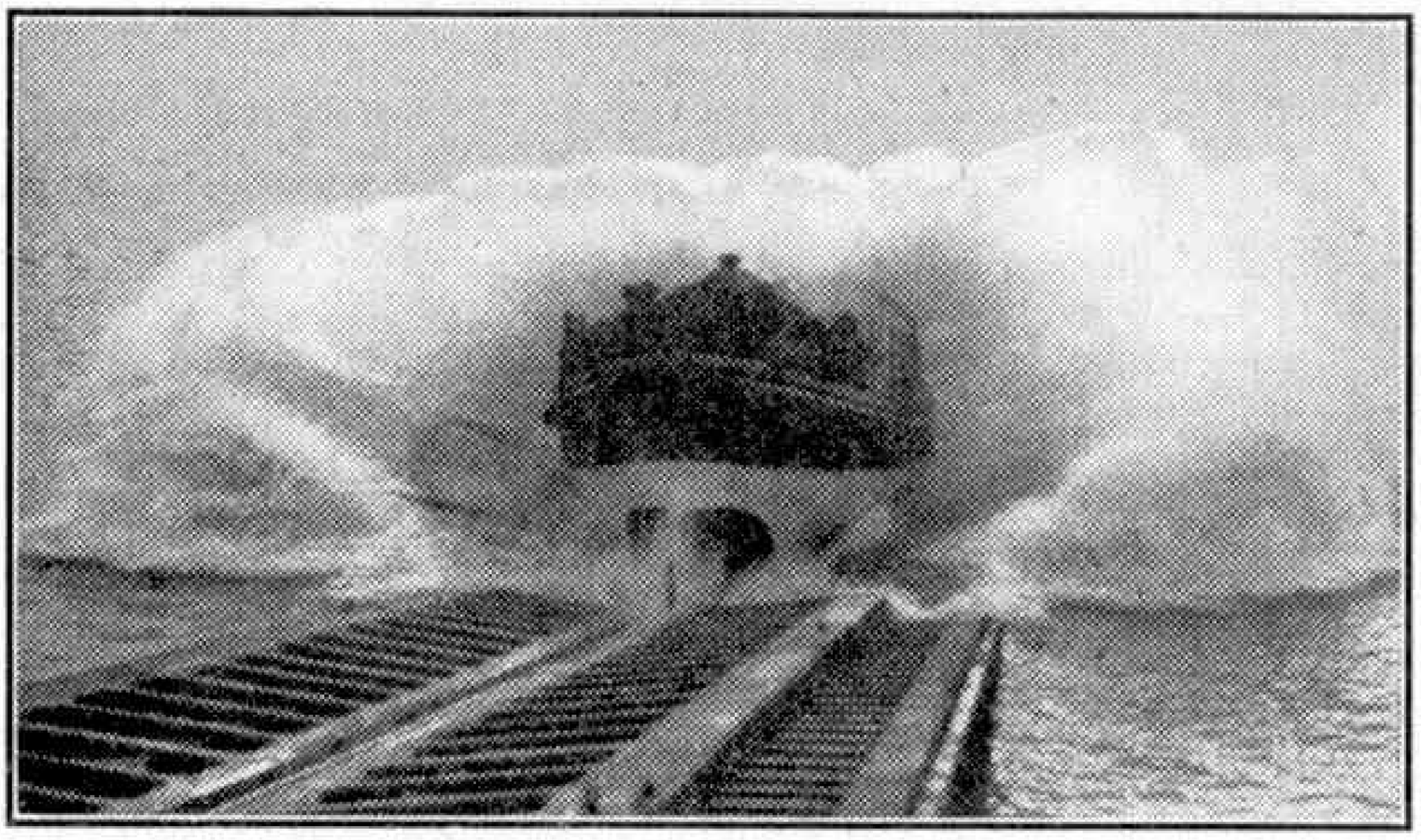


New Hornby-Dublo Signal Cabin.

The Signal Cabin is of a type that is becoming increasingly common in real practice. The upper (*Continued on page 428*)

The Story of the Life-boat

THE British life-boat service is one of our greatest glories. It is entirely voluntary. Its funds come from the contributions of all who wish to take some part in the wonderful work that it does, and its boats are manned by volunteers, who put out to sea when storms are at their worst, facing all dangers in the roughest weather. In the 126 years since the Institution was founded 76,000 lives have been saved; last year alone the lives rescued numbered 396, and 181 persons were landed from vessels in which they might have been in danger.



A modern life-boat launch, at Tynemouth. Photograph by courtesy of the "Shields Evening News."

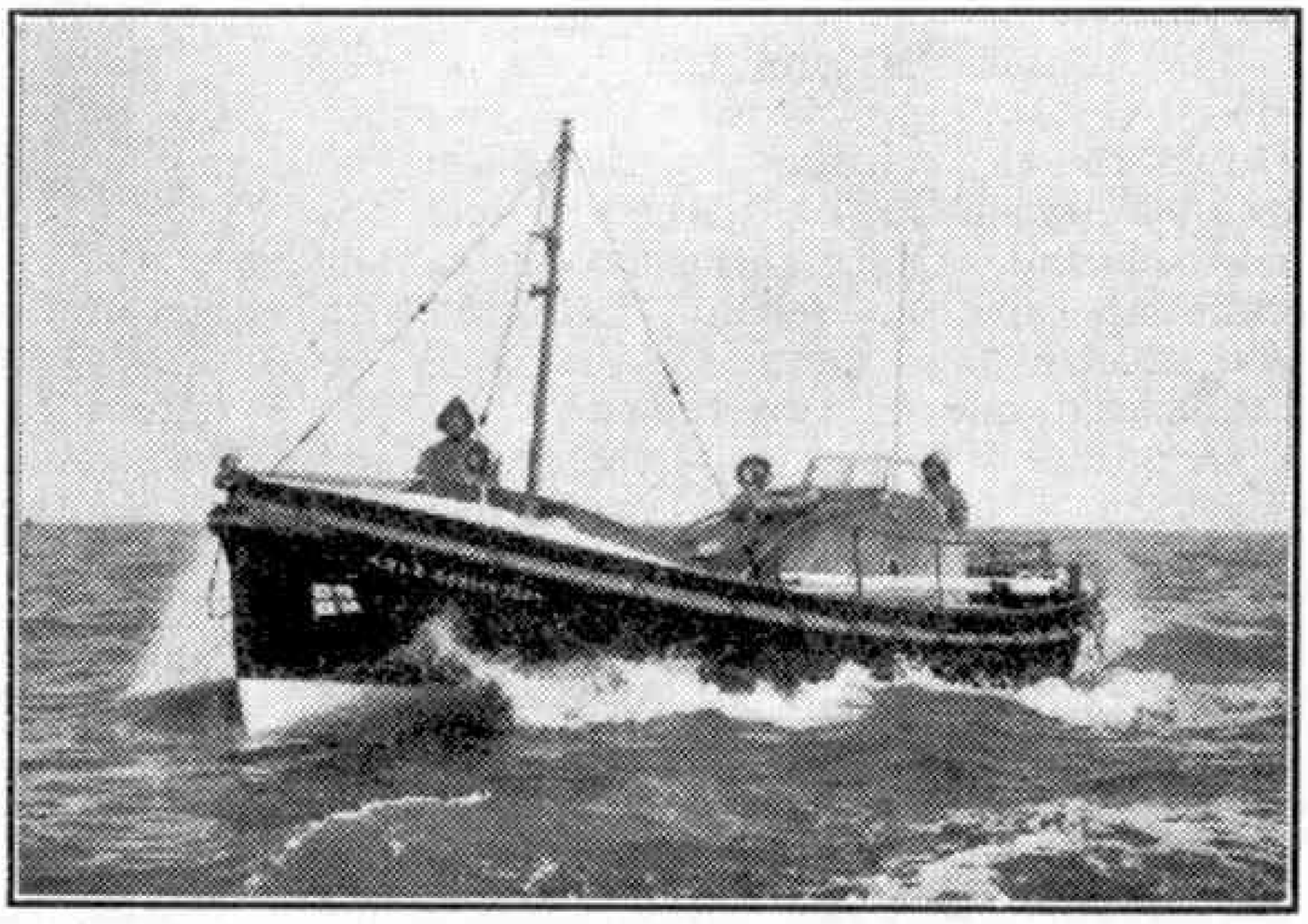
The record through the years of the life-boat service is told in *"The Story of the Life-boat, 1824-1950."**. In this we are given the story of the earliest efforts to build boats that could be taken out in safety in the roughest weather, by William Woodhave and Henry Greathead, and of the splendid work of William Hillary, of Douglas, who launched the first appeal for a national service, an appeal that was answered by the formation in 1824 of the Society that is now known as the Royal National Life-boat Institution.

Since its foundation the Institution has persistently improved its life-boats, as the outline of its history in this booklet explains. The world has been searched for woods to fit its purposes, and one modern invention after another has been pressed into service. Foremost of these is the internal combustion engine. No longer do the life-boatmen exhaust themselves by pulling at their oars. Instead their boats have motor engines that give them a speed of over 8 knots and a range of 230 miles. The speed is not high, but life-boats do not travel fast. If they did their crews would be washed out of them. What they have is a great reserve of power with which they can maintain their speed in almost any conditions.

It is not enough to instal engines, searchlights or radio sets in a life-boat. Every invention that is introduced has to be specially adapted to the conditions in which it will work. For instance, the engine must be watertight, capable of running when the engine room is flooded and of lubricating itself even when the boat is standing on end, but it must stop immediately when the vessel capsizes. Otherwise it would carry the life-boat away from the men immediately it righted itself. The most difficult invention of all to adapt to life-boat work has been radio. When it was first used, in 1926, it could only be fitted in boats with cabins, in which it could be protected from the sea. Persistent work has now yielded a new design, for sending as well as receiving wireless messages, that can be used in all life-boats without fear of damage by the sea, and in conjunction with this a loud-hailer, one of the inventions of wartime, can now be used to give instructions to men on the ships helped.

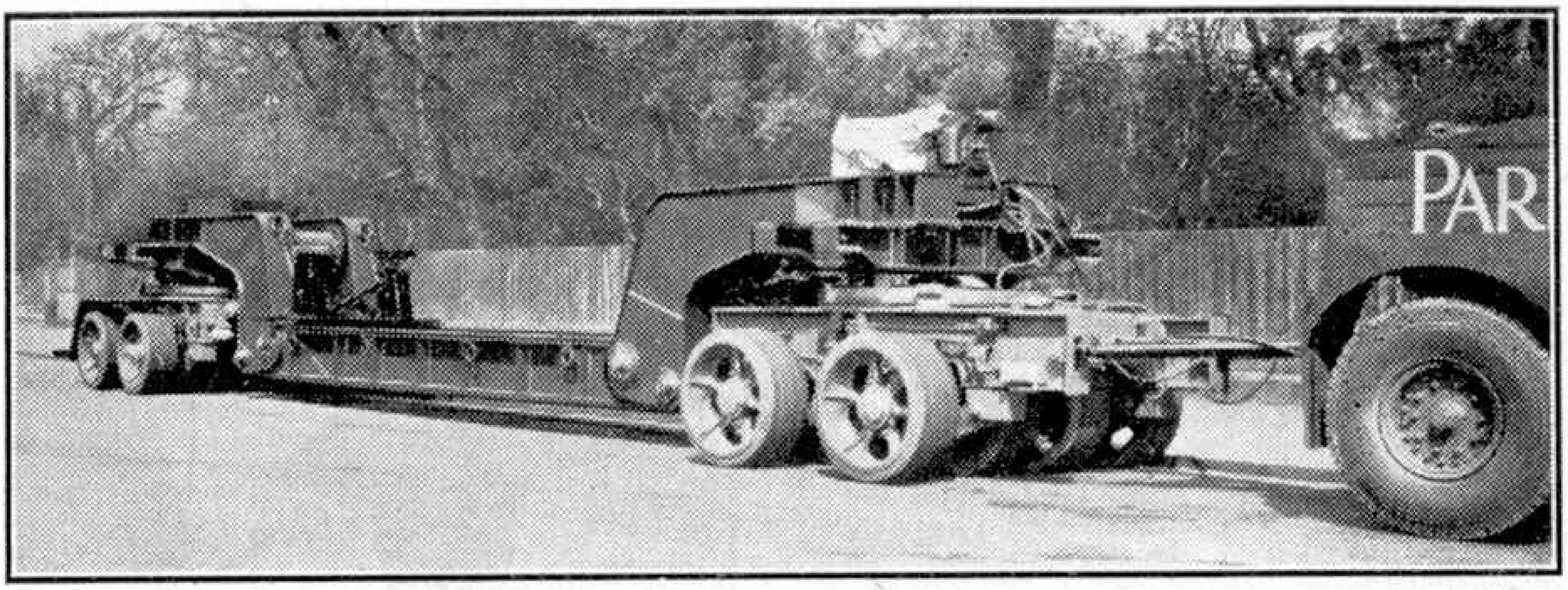
The story of these wonderful developments is well told in the booklet, which explains the system followed by the Institution to-day. It also gives a grim reminder of the dangers that are willingly faced by life-boatmen by telling the story of the loss of the Mumbles life-boat three years ago, when her crew of eight and the 41 men of the steamer to the help of which they were going were drowned. The previous occasion on which a life-boat was lost with all her crew was at Rye Harbour 20 years earlier. The devotion and courage of the men of the Services is well illustrated by the fact that in the intervening period over 90,000 life-boatmen took part in rescues that saved 12,000 lives, a service in which 56 members of the crews lost their own lives.

This record of life saving is splendidly illustrated with reproductions of actual photographs, and has a handsome coloured cover showing an interesting scene in the rigging loft of the Institution's depot at Elstree.



The life-boat at sea. The vessel is the twin screw light Liverpool type of life-boat stationed at Seaham.

* *"The Story of the Life-boat 1824-1950." Royal National Life-boat Institution, Life-boat House, 42, Grosvenor Gardens, London S.W.1. Price 1/-.*



A 50 ft. trailer with many novel features built by R. A. Dyson and Co. Ltd., Liverpool, to whom we are indebted for our illustration. It has been designed to carry excavating machinery.

Giant Trailer to Carry Excavators

THE huge trailer shown in the illustration at the head of this page is more than 50 ft. in length, and it can carry a load 20 ft. 6 in. long, and almost 9 ft. wide if required on the trailer, or up to 15 ft. wide when tracks overhang each side. It was designed to carry excavators to and from the site of large scale digging and clearing operations, and includes special features that were required by its owners, Sir Lindsay Parkinson and Co. Ltd., civil engineers. The makers were R. A. Dyson and Co. Ltd., Liverpool, who have long been famous for the design and construction of trailers and other vehicles required for heavy duties.

The trailer has a straight centre bed or chassis frame, consisting of two heavy girders connected by cross bearers. At each end are two pairs of cranked chassis extensions, which are secured to the chassis bed with high tensile steel pins, two for each crank, 6 in. in diameter. As the excavators to be carried vary considerably in make, size and weight, the width of the chassis has been made capable of adjustment by providing cross members of different lengths, which give widths varying from 3 ft. 4 in. to 7 ft 1 in. centres. Certain excavators are carried with the tracks on each side of the chassis bed, while for others they are on top of the chassis girders.

The cranked extensions of the chassis are bolted to cross bolsters on the front and rear bogies. Each of these in itself is a small 8-wheel trailer, fully sprung and fitted with self-contained mechanical and air pressure braking, with a safety feature that applies the brakes if the supply of compressed air fails. There are eight wheels to each bogie, fitted with Timken taper roller bearings, and the giant Henley tyres fitted to the wheels are of solid rubber, each capable of carrying a load of 8 tons. The rear bogie has a hand steering device, and the steering gear and brakes are controlled by one of the crew travelling on a platform mounted on rubber springs.

One of the difficulties of transporting unusual loads such as those for which the trailer was designed is that of passing under low bridges. Another is the negotiation of hump back bridges, on the crown of which the centre of the trailer may easily ground. In the past these difficulties have been met by using either screw or hydraulic jacks to lower or raise the centre bed. In the new Dyson trailer hydraulic jacks are specially built into its bed in order to save space. There are four of them, two at each end, and with their use a minimum clearance of 10 in. and a maximum of 15¼ in. can be given. In addition, the hinge pin of the rear crank is in an eccentric housing, which allows a further difference of an inch, making a total difference of 6¼ in. The jacks are operated by a pump driven by a self-contained 3 b.h.p. petrol motor.

For loading purposes, the centre bed is disconnected from the bogies and lowered to the ground, after which the excavator to be carried is driven into position and its load distributed by inserting timbers. For most loading purposes it is sufficient to detach only one of the bogies.

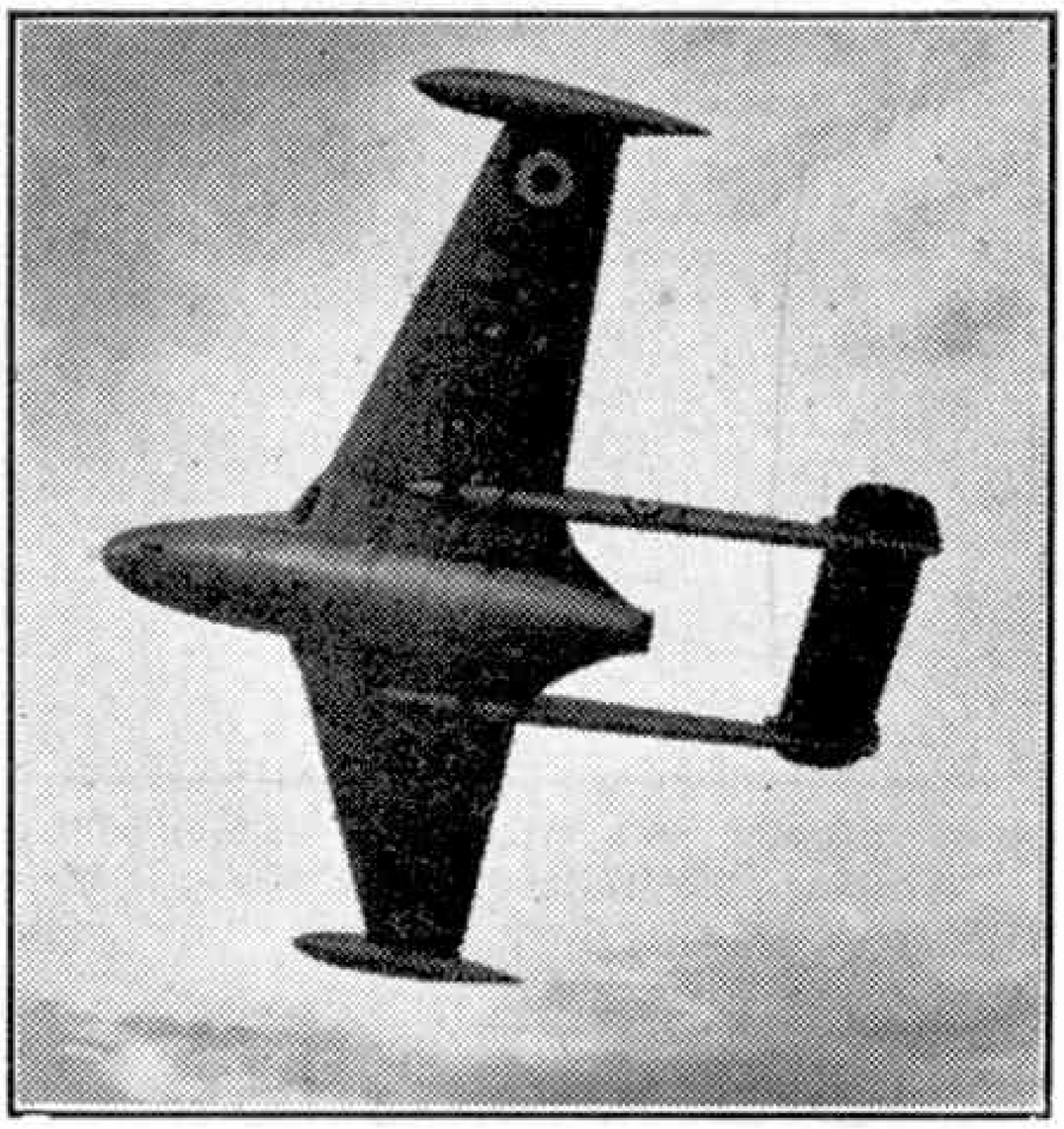
Air News

By John W. R. Taylor

R.A.F.'s New Fighter

The top photograph on this page shows the de Havilland "Venom" single-seat fighter, now in production for the Royal Air Force. This type is a development of the famous "Vampire," which is standard equipment in 12 of the world's air forces. Chief differences are the "Venom's" new thin, slightly swept-back wing and the installation of a 5,000 lb. "Ghost" turbojet instead of the "Vampire's" 3,000 lb. "Goblin." These changes give marked increases in maximum speed, service ceiling and rate-of-climb, as anyone will confirm who has seen the "Venom" demonstrated!

Many of its components are interchangeable with those of the "Vampire," which has helped de Havillands to get it into production quickly and will simplify Service "spares" problems. Furthermore, pilots familiar with the "Vampire" will have little difficulty in converting on to its more powerful successor. A new feature, shown to advantage in the illustration, is the adoption of wing-tip fuel tanks, which have so little effect on manœuvrability that they would not need to be jettisoned before entering combat.



A de Havilland "Venom" Jet Fighter. The photographs on this page are by courtesy of de Havilland Enterprise.

Another Record for the "Freighter"

A Bristol "Freighter" belonging to the Shell Company of Ecuador recently carried an 11,000 lb. mud pump from Shell Mera to Villano in that country. This is believed to be the largest and heaviest piece of equipment ever carried by an aircraft in one loading, surpassing even the feat of an Australian National Airways "Freighter," which carried a 9,264 lb. road grader from Melbourne to Flinders Island.

The pump was man-handled from a lorry to the aircraft's hold on steel rollers, and then flown over dense jungle to a small settlement near the site of a new oil well, inaccessible to anything but air transport.

16,000-Mile Holiday Trip

Every year when the Summer holidays come round B.O.A.C. carry about 500 school children from Britain to their parents, living in such widely separated countries as India, Hong Kong and Australia. The popularity of these "children's specials" is shown by the fact that within a few days of opening bookings for a service to Ceylon this Summer, 24 children had reserved their seats for the 16,000-mile round trip.

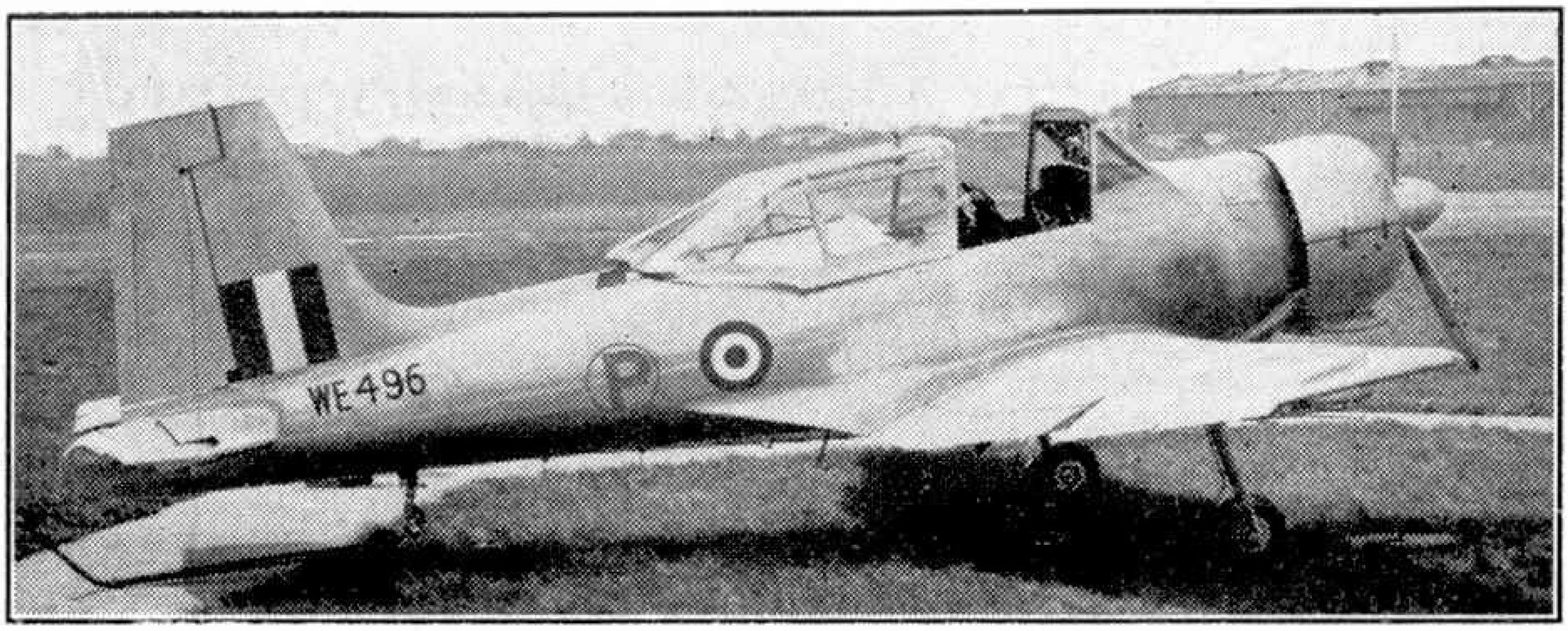
New British Air Liner

The de Havilland D.H.114 "Heron" 14-17 seat light air liner, to which reference was made in the "*M.M.*" of July last, is illustrated below. It is about the best attempt yet made to provide a replacement for the veteran D.H. "Rapide," mainstay of short-range passenger air services throughout the world. Since the end of the war there have been many contenders for the "Rapide's" crown, but without exception they have proved uneconomical for the job, usually because of expensive "frills" such as retractable undercarriages, which are not needed for local services.

The "Heron" has few frills. Basically, what de Havillands have done is to take a "Dove," lengthen its fuselage to accommodate twice as many passengers as usual, extend its wings to give it sufficient lift to operate from small airfields, and add a couple of engines to ensure adequate performance. The result is an aircraft ideally suited for services such as those to the Isle of Wight, Channel Islands and round the Scottish Islands.

With an all-up weight of 12,500 lb., the "Heron" can carry 17 passengers for 150 miles, including full allowances for head winds, diversion and fuel reserves. At the other end of the range scale, it has a maximum stage length of 850 miles carrying eight passengers and their baggage. The "Heron" has a wing span of 71 ft. 6 in., and its four "Gipsy Queen" 30 unsupercharged engines give it a cruising speed of 160 m.p.h.

The de Havilland D.H.114 "Heron" air liner making its first flight.



Another new British type, the Handley Page H.P.R.2 basic trainer. Photograph by courtesy of Handley Page Ltd.

625 m.p.h. Argentine Jet

A new Argentine jet fighter, powered by a Rolls-Royce "Nene," is reported to have exceeded 625 m.p.h. during its first test flight from Cordoba military air base.

It was designed by Prof. Kurt Tank, formerly chief designer of the German Focke-Wulf Company and now chief of the Argentine Government's research plant. If reports of its speed and manœuvrability are correct, the new fighter seems a worthy successor to Tank's brilliant wartime F.W.190.

Handley Page Basic Trainer

The little Handley Page (Reading) H P.R.2 basic training aircraft, illustrated above, has been designed to meet the latest Royal Air Force requirements for a side-by-side, two-seat flying trainer. It is powered by the well-proven Armstrong Siddeley "Cheetah" 17, one of the most reliable aero engines ever built.

Sturdiness and simplicity are keynotes of the H.P.R.2's design, well fitting it for hard treatment, such as prolonged sessions of "circuits and bumps," and for ease of maintenance by Service ground crews. Its airframe is built on the well-known Handley Page "split assembly" principle, involving the use of numerous separate easily-assembled major components, which facilitates initial production as well as replacement and repair in service.

The H.P.R.2 is now on test prior to official evaluation in competition with the Percival P.56, which is similar in appearance and powered by the same type of engine.

Passenger-Carrying Record by U.S. Flying Boat

The U.S. Navy's 82-ton Martin flying boat "*Caroline Mars*" has established a world's long-distance passenger-carrying record by flying 142 passengers and crew 2,250 miles from Honolulu to San Diego, California. The flight was made at an average speed of about 158 m.p.h.

"*Caroline Mars*" and her three sister ships are the largest, most powerful flying boats in service, until the giant Saunders-Roe "Princess" flies next year. Each is powered by four 3,000 h.p. Pratt and Whitney R.4360 engines and has a top speed of 238 m.p.h. Wing span is 200 ft., and an idea of just how big the "*Caroline Mars*" is can be gained from the fact that the crew's flight deck is larger than the whole interior of a 21-passenger air liner like the "Dakota."

All the "Mars" flying boats are double-deckers, with six large fuel tanks under the lower deck in the hull and more tanks in the wings. If necessary, crew members can enter the wings to service the engines in flight.

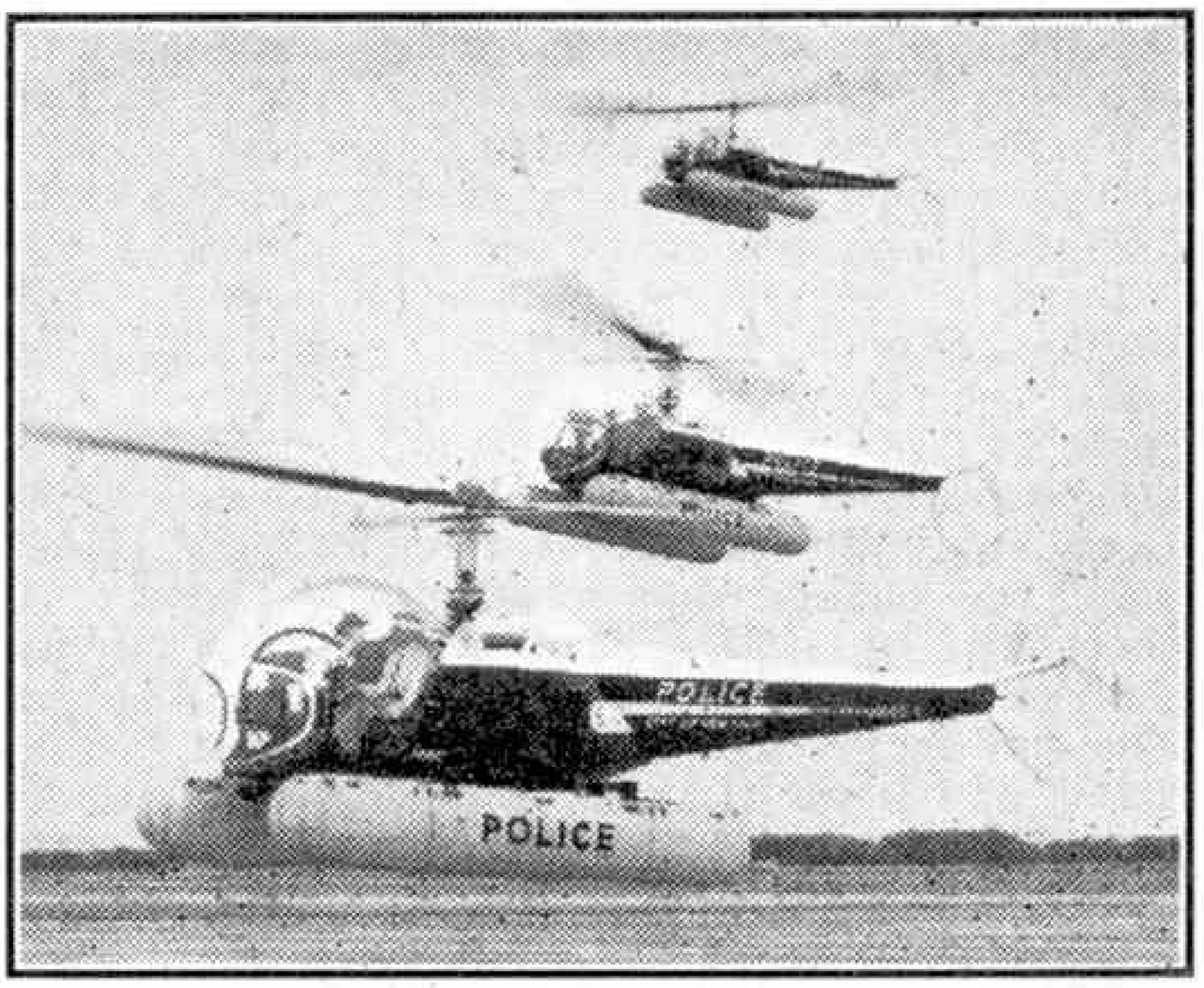
New York Police Use Bell Helicopters

The New York City Police Department have taken delivery of three of the latest model Bell 47D1 helicopters, following two years of spectacular service by an earlier Bell machine, which saved at least 20 lives in that time. The three helicopters, which are painted in standard Police Department green and white, with brilliant yellow pontoons, are based at Floyd Bennett Field.

The original Model 47 used by the Police logged more than 300 hrs. flying, during which, among other things, it rescued 12 persons from quicksands in Jamaica Bay, one of whom had sunk up to his neck. On another occasion in Winter-time a half-frozen pilot was pulled from the float of his overturned aircraft in the icy waters of the bay. The helicopter was also used to track down four escaped convicts, and, when one day a motor boat got out of control, tossed out its occupants and churned wildly among nearby craft, a patrolman was dropped aboard from the Model 47 to bring it back to shore.

* * * *

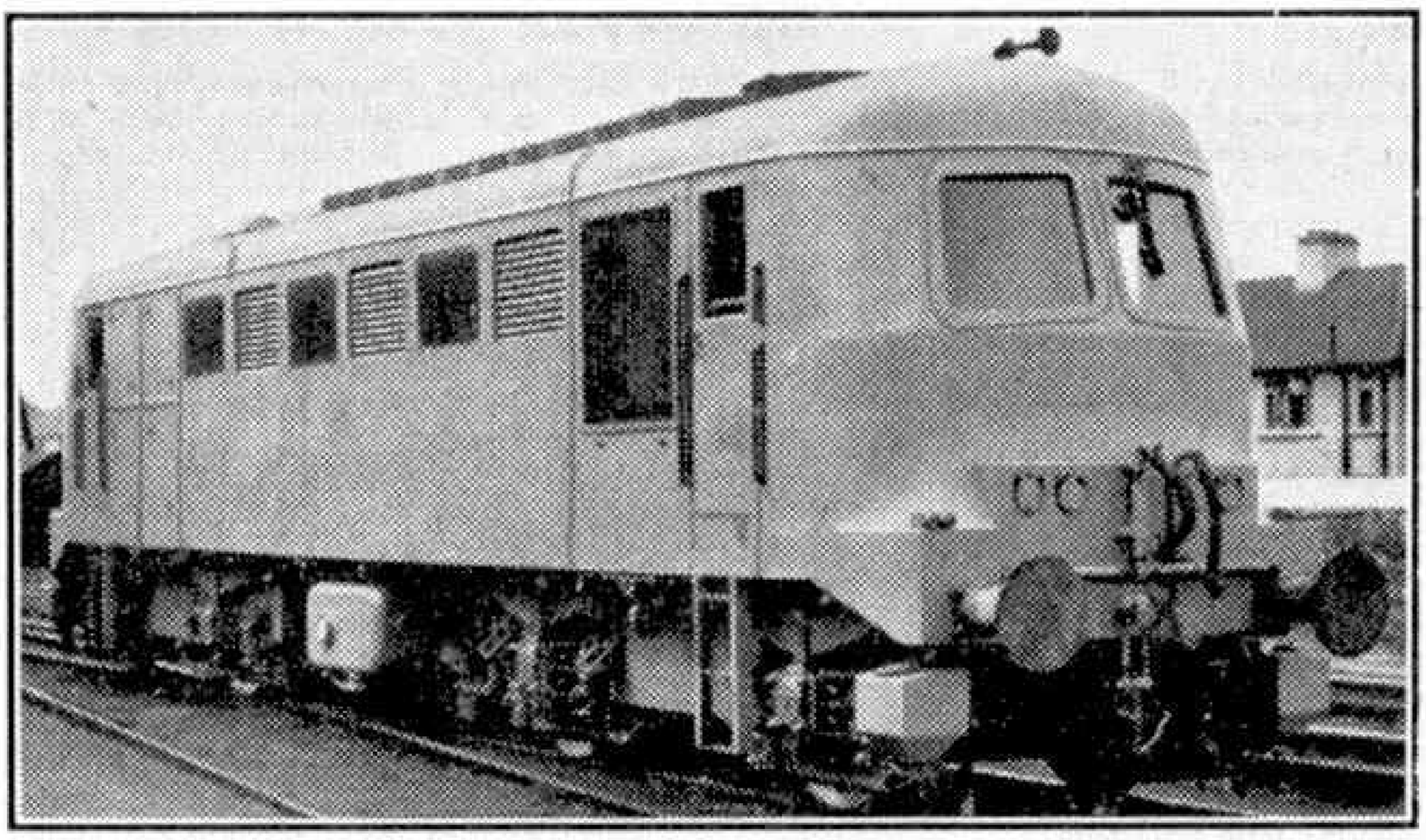
The Fairey 17 twin-engined anti-submarine aircraft has completed successfully its first deck-landing trials on H.M.S. "*Illustrious*." It is the first "propjet"-powered aircraft ever to land on a carrier deck.



These Bell 47D1 de luxe helicopters are now in service with the New York Police Department Aviation Bureau. Photograph by courtesy of the Bell Aircraft Corporation, U.S.A.

Irish Railway Diesel Developments

AN interesting development in diesel traction in Ireland took place in June last when the G.N.R.(I) introduced a three-car diesel train into their main line service between Dublin and Belfast. Thus there has been put into effect the decision that was announced in the "*M.M.*" in November 1948. The G.N.R.(I) have had long experience of the use of various oil-engined railcars, for its earliest vehicles of this kind were first put into service some 18 years ago. Single, twin-unit and triple-articulated cars have marked different stages in G.N.R. railcar development, but the new train now in service consists of three separate vehicles, two similar diesel-engined railcars having a trailer car between them. The general appearance of this unit is well shown in the upper photograph on the next page.



The first of the Sulzer-engined diesel electric locomotives for mixed traffic duties on the C.I.E. system. Photograph by courtesy of Sulzer Bros. (London) Ltd.

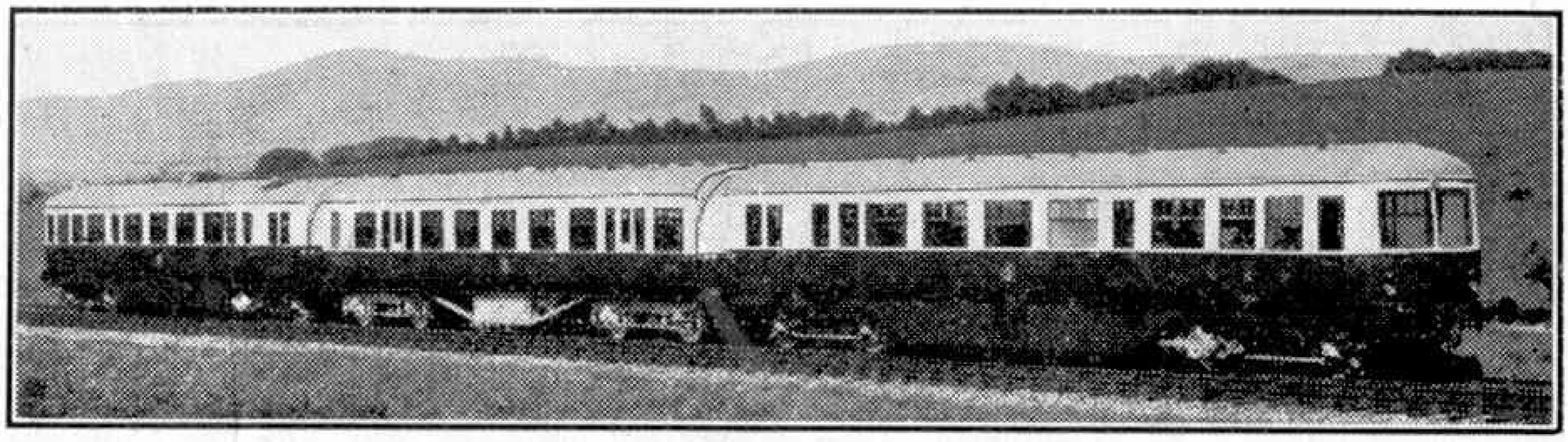
In all, 20 new railcars are to be provided. Unlike those forming part of the new train the others are to be used singly, both on the main and secondary lines, in substitution for certain steam trains. It will naturally take some time to complete the change but it is planned to effect this by 1951. Most G.N.R. train services will continue to be steam worked. The aim of the company is to run shorter trains and more of them, and thus offer frequent, attractive, speedy services, a policy that was applied with success by the former Midland Railway.

The railcars were specially designed and built by A.E.C. Ltd., Southall; while Park Royal Vehicles Ltd. have been responsible for body design and construction. As builders of the railcars used since 1934 by the former G.W.R., the A.E.C. firm have valuable experience to draw upon; while the running results of previous railcars on the G.N.R. have no doubt had a useful bearing on the requirements of the present design.

The new three-car Dublin-Belfast train accommodates 142 passengers, each power car seating 12 in the first-class and 32 in the third-class sections. The cars are of the centre-gangway type and corridor connections are fitted so that refreshment service is available throughout the train, a buffet being provided in the centre trailer coach specially built by the G.N.R. at Dundalk Works. The complete train is finished in blue and cream livery adopted as standard by the G.N.R. for their railcars and road motors. A welcome touch of heraldry is provided by the coat-of-arms of the company that is displayed on the lower body side panels of each car. The roofs are finished in grey.

Each of the power cars measures 66 ft. 6 in. over buffers and weighs over 38 tons. Two independent power units, six-cylinder A.E.C. oil engines each of 125 h.p. are arranged symmetrically on both sides of the frame. These engines are suspended under the floor, with fluid flywheel and shaft drive to a five-speed gear-box. The final drive is also by means of a shaft and incorporates double reduction gear. Special insulation is provided between the floor and the units.

The under-floor position permits of ready inspection of the power units and transmission at rail level, as can be seen in the lower illustration on the next page. In addition it means that the power units do not encroach on the space required for passengers and their luggage. Engines, radiators and transmission are shrouded by side fairing so that practically the only external evidence of any "works" is the final shaft drive to one axlebox on each



G.N.R.(I) three-coach diesel express train recently introduced in Dublin-Belfast service. The photographs on this page are by courtesy of G.N.R.(I).

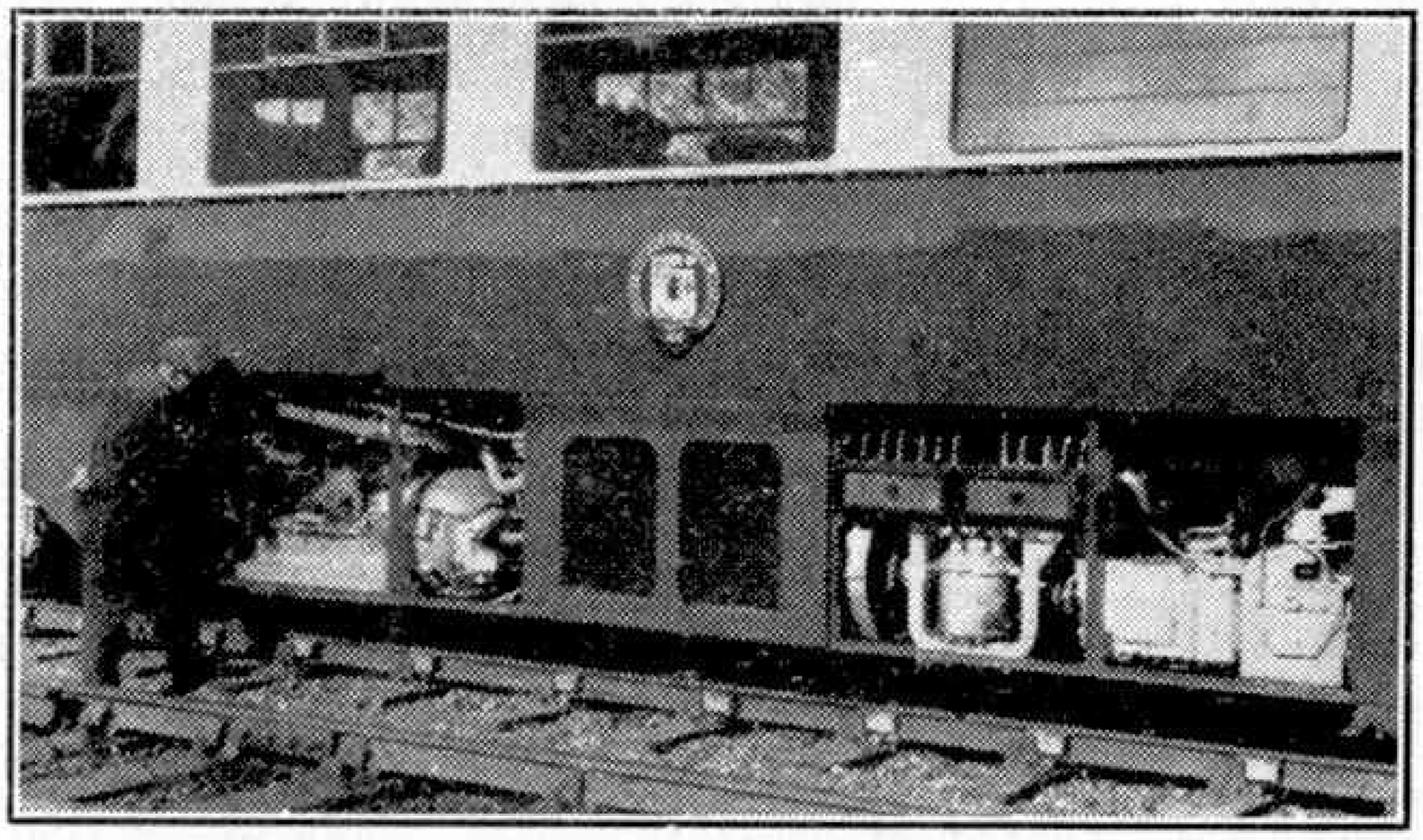
side of each power car. Two main fuel tanks to each power car provide for about 500 miles running.

There is a driver's compartment at the outer end of each power car, and as might be expected the view ahead from the driving seat is excellent. To help to maintain this in rough weather conditions window wipers of generous size are provided. The driving equipment is simple and conveniently arranged. There is the usual deadman's handle, gear selector and gear change handles, vacuum and hand brake fittings. A revolution counter fitting and vacuum and air gauges each tell their tale to the engineman, while sanding gear and warning horn also have separate operating levers. Incidentally, the partition between the first-class section and the driving compartment is glazed, so that passengers in this section have a view ahead or to the rear as the case may be.

At the inner end of each power car is the guard's compartment and luggage accommodation. Train heating is carried out by steam supplied from an automatic oil fired boiler. Lighting is on the usual system from generators and batteries under the floor. The maximum speed of the complete unit is 70 m.p.h. The underframes of both power and trailer cars are steel. Timber body framework is used, the outside panels being of steel on the power cars and of special hardboard on the trailer.

As in the power cars modern style and materials are prominent in the finishing and fitting up of the central trailer car, chromium plating and coloured plastics being employed. The buffet section occupies the centre of the car. This vehicle measures 62 ft. over buffers and weighs 29½ tons.

The possibilities of diesel traction are not being overlooked in Eire for the Irish National Transport Co., better known perhaps as Coras Iompair Eireann, have recently taken delivery of two double-bogie 915 h.p. diesel-electric mixed traffic freight locomotives with complete power and transmission equipment supplied by Sulzer Bros. (London) Ltd. These are powered by the special type of railway oil engine now being built at the Vickers Works at Barrow to Sulzer requirements. The locomotives are able to haul 360-ton freight trains at 48 m.p.h. up 1 in 1150 grades, and at 17–18 m.p.h. up 1 in 84. To meet the railway specification they have been limited to a top speed of 55 m.p.h. The Sulzer engine has six cylinders, runs at 750 r.p.m. and is coupled to a main generator which supplies current to four force-ventilated traction motors.



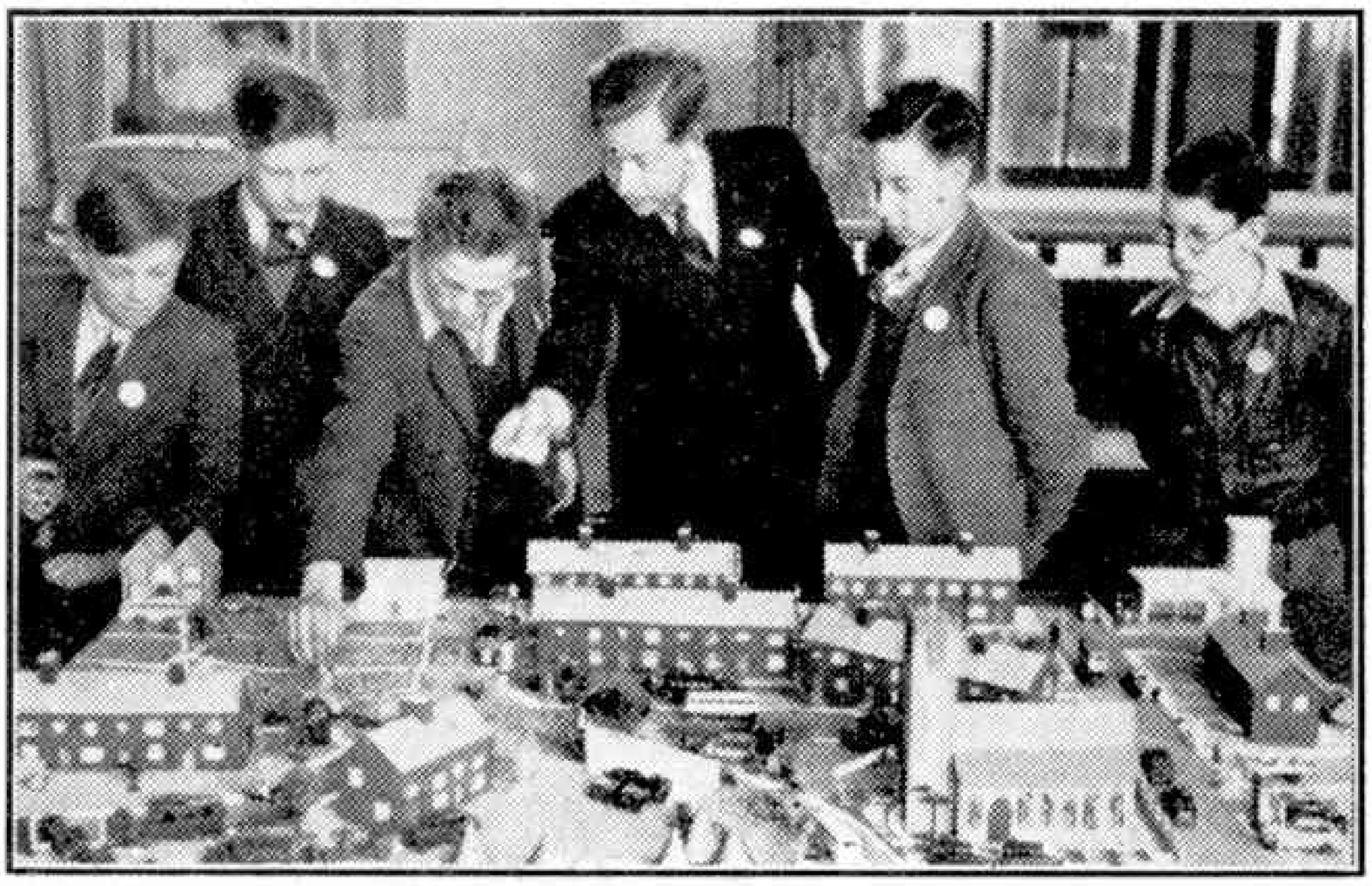
The under-floor arrangement of power unit and transmission on the railcars permits ready inspection from rail level. The covers normally shrouding the power equipment are here removed.

Fun with Dinky Toys

An Effective Road Safety Demonstration

THE splendid model village seen in the illustration on this page was constructed by members of the Art and Craft Society of the Haslingden Secondary Modern School, under the direction of their art master Mr. G. H. Tomlinson. The village is extremely well laid out, and the buildings include shops and garages, with a cafe, an hotel, a fire station and a church, as well as houses.

In the design of the village, which was built within a week, great attention has been paid to detail. Television aerials rise above some of the houses, telephone kiosks are available for the villagers, the barber's shop has its striped pole, and even the gravestones in the churchyard have inscriptions on them. There is also a miniature pond, on which tiny ducks are swimming, and to add to the variety as well as to provide reason for heavy road traffic in the village, it is supposed that an army unit is encamped there. In our illustration the tops of some of the tents of the camp can be distinguished in the foreground, on the left of the church.



The extensive model village built by the boys of the Art and Craft Society of the Haslingden Modern Secondary School under the direction of Mr. G. H. Tomlinson, art master in the school, who is seen here with some of the members of the Society. The model was specially designed for use with Dinky Toys of all kinds in road safety demonstrations.

There was more behind the creation of this model village than exercise in craft work. It was built for use during National Children's Safety Week in March last, and it made such a great appeal that it became one of the larger exhibits in Haslingden's Safety First Exhibition in April. The layout incorporates the usual road crossings and other familiar features, including islands for pedestrians crossing the road. It was indeed designed specially to illustrate the rules governing safety on the road. For this purpose Dinky Toys of various kinds proved ideal, and 60 of these, including lorries and buses as well as private cars, were placed in correct positions on the layout and moved about as required to illustrate the right and wrong ways of driving and of road crossing by pedestrians. Dinky Toys Traffic Signals are installed to provide exactly the same guidance to traffic as do those seen on our real road systems, and throughout the greatest emphasis was laid on complete accuracy.

The model has been largely used in the school to develop road sense among the pupils, not only in short lessons but also during sessions of the Dinner Time Club. In one particularly ingenious scheme pupils are given a short time to examine the model. Then they leave and in their absence vehicles and pedestrians are moved about to create breaches of the highway code. For instance, a car may be placed on the wrong side of a traffic island; another may be shown running past a halt sign; or a pedestrian may be seen stepping off the pavement a distance from a crossing, or emerging from behind a vehicle. When the pupils return they are asked to find the mistakes, and so well are the lessons driven home by the model that it is seldom indeed that any of the errors remain undetected. This magnificent model village is indeed a splendid example of the value of this form of instruction, in which Dinky Toys play such a prominent part.

Camera Work in September

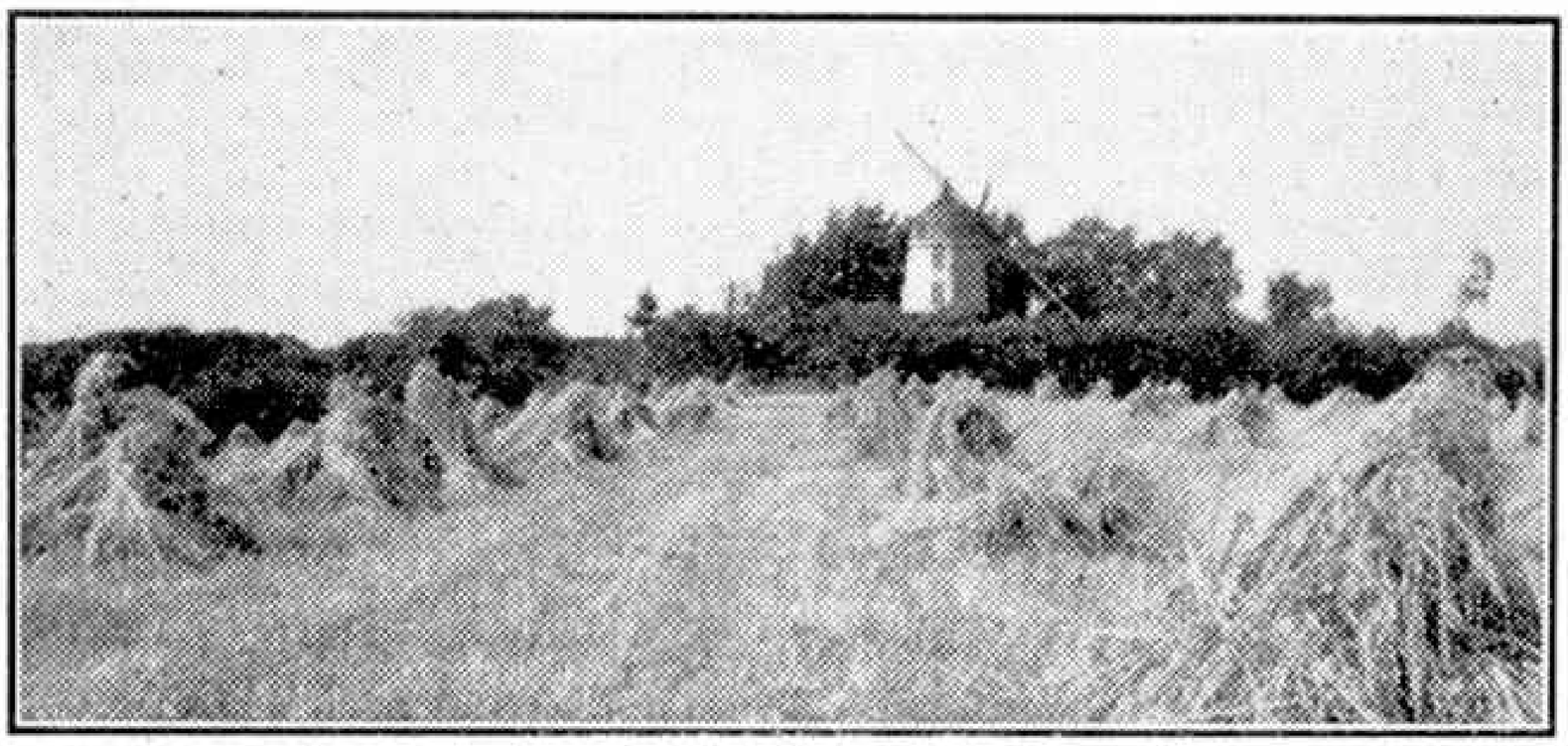
Harvesting

By John J. Curtis, A.R.P.S.

THERE is so much beauty in our countryside at this period of the year that it is not surprising that September is a very popular month with those folks who can take their holidays then.

Harvesting is in full swing, country lanes are full of the charming early Autumn tints, the temperature is right for walking, and usually the weather is good. For the photographer the light is not too strong and generally some good clouds are present to add beauty and softness to our results.

With such conditions it should not be difficult to secure a batch of good negatives this month of a variety of subjects, but let us try to concentrate our efforts on harvesting scenes. One way of doing so is to hire ourselves out to a farmer for a few days and be on the spot from morn till evening; if the camera is always with us, as it should be, then some jolly good figure studies as well as open scenes of the field-work should be obtained before the few days are over. Pictorially we should naturally prefer horses to tractors, but of course we have to take things as they are; and very attractive pictures can be made with tractors at work.



Ready for the mill.

If it is not possible to offer service to the farmer you will be wise to note the time when reaping is to commence, and be on the spot that day. Then, always with the permission of the farmer, enter the field and take up a position where the

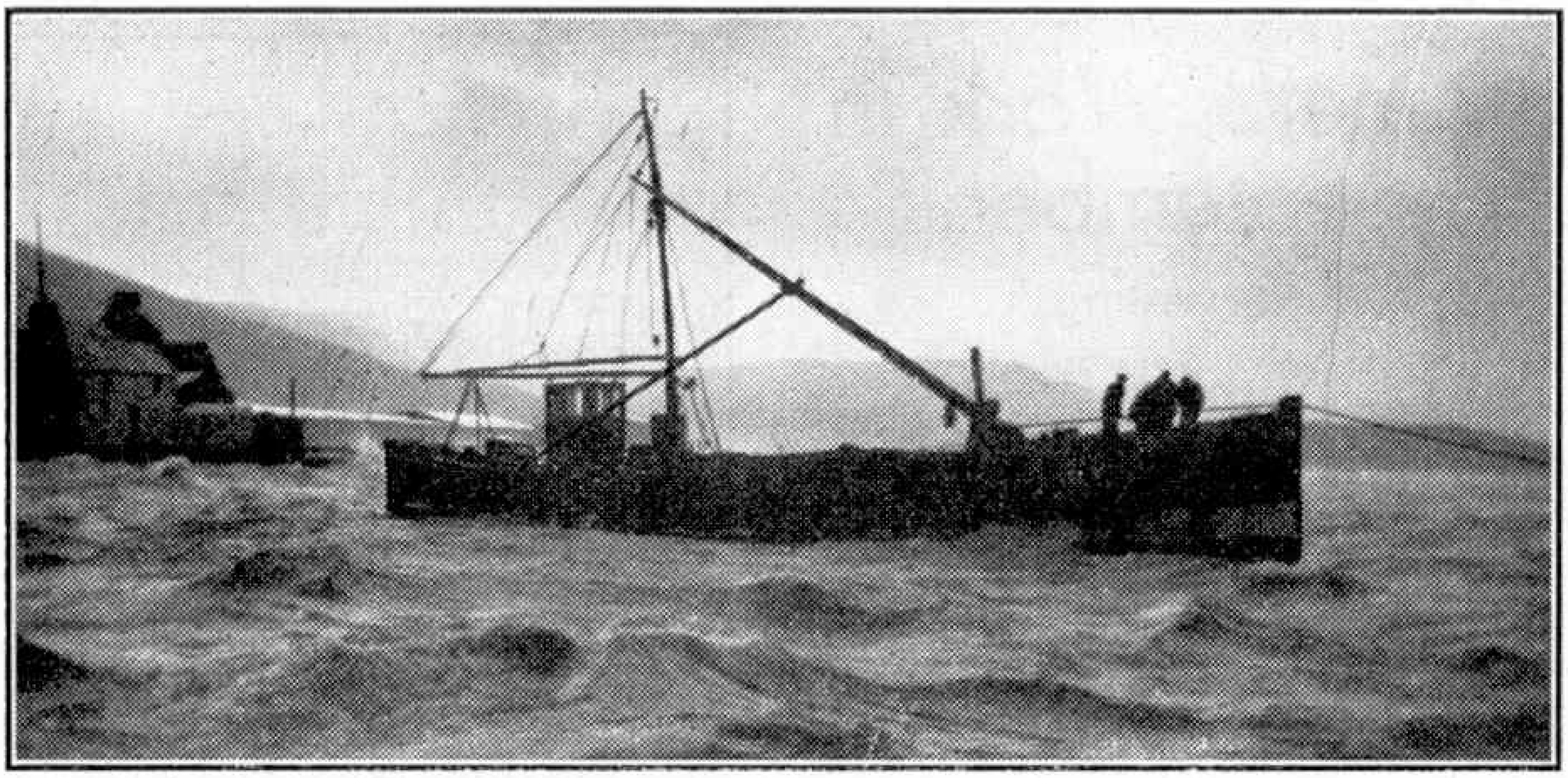
Carting the corn. The photographs on this page are by the author.

standing corn is to appear in the background of each shot. Let the men see that you are really interested in their work and you will find that they will be willing to pose their horses or to help you in any way they can. This may be worth a lot to you, so if you promise to send them some prints, be sure to fulfil the promise. A forgotten promise of this kind may make things unpleasant and difficult for the next photographer who comes to the same scene.

At this time of the year it is advisable to use a good make of panchromatic film with a 2x filter. There may be times when a stronger filter would give even better results, but for the majority of outdoor subjects it is not necessary.

Try to make your pictures "tell a story" by taking a series of photographs of some good field of grain, beginning with a picture of the uncut grain and ending with one showing the last load being carted from the field, and then mounting them in correct sequence.

Prints of harvesting scenes look better in a warm colour than in the cold black and white of the ordinary gaslight print. Attractive warm tones can be produced very simply by means of the Johnson's sepia toner. All that is necessary is to immerse the gaslight print in the solution.



A Scottish herring drifter leaving a northern port at sunset.

Herring Harvest

By James Worth

HAVE you ever watched the herring fleet steaming from port for the distant fishing grounds of the North Sea? In the glow of a fine summer evening, or an autumn twilight, this is one of the most impressive sights around our shores. The tough little ships, manned by brawny and stout-hearted crews, may be away several days and nights in all weathers before returning with their huge silvery cargoes.

Herring fishing goes on through many months of the year. From the far Hebridean grounds, where the first shoals appear during May, the driftermen follow the herrings half-way around the seas of Britain in a clockwise direction, finishing up in the Autumn with the famous East Anglian season at Great Yarmouth and Lowestoft.

In the late spring most of the drifters are based on Stornoway, capital of the Outer Hebrides and remotest of all our fishing ports. In June they move round to Lerwick, in the Shetlands, and during July and August to Peterhead and Fraserburgh in north-east Scotland. And then, by way of North Shields and Whitby, the driftermen head south for the last and busiest weeks in East Anglia.

Year after year, punctually to the appointed time, vast migratory herring shoals crowd the sea at distances between thirty and fifty miles from the British coasts. Shoals may vary considerably in size. Sometimes they cover an area of five or six square miles, though a single shoal nine or ten miles wide is by no means rare in parts of the North Sea. During an average season well over two thousand million of these fish are landed by hundreds of drifters at English and Scottish ports.

In their fresh state herrings provide one of the cheapest and most nutritious of foods, rich in oil and essential vitamins. The best of the catch is purchased for the home market, to be sold as fresh herrings or to be bloatered and kippered. Then a large part of every cargo is salted down in barrels for export, mainly to the Continent. All the surplus edible herring are converted into oil and meal which, again because of the high vitamin content, are being increasingly used in a variety of manufactured foodstuffs.

Any fish left over after these trade requirements have been met is chemically treated and turned into a first-class land fertiliser. When too many herring are landed at a port the same day much excellent fish has to be disposed of this way and the driftermen concerned find their nights of toil wasted.

Herring fishing indeed can bring much disappointment as well as success to the crews of the little North Sea drifters. To begin with, although the shoals may be of

enormous size, they are not always easy to find. On many occasions a captain and his crew have been out for one or two, or perhaps even three nights without the reward of a really good catch. At other times, however, a catch may be so heavy that the nets collapse under the strain and the trip results in total loss.

Locating the shoals is one of the chief problems for the drifter captains. Most of the older skippers rely on their instinct, born of a lifetime of experience, and claim the ability to "smell" the shoals. But to-day such scientific devices as the echo sounder and plankton indicator are being used on many drifters as the result of experiments made by fishery research ships in the North Sea, the Atlantic and Arctic fishing waters.

Plankton, which consists of swarms of microscopic organisms floating on and near the surface, is the main diet of the herring. If there is plenty of plankton about, there is sure to be herring too. The plankton indicator is a small film-covered plate which is let down into the sea and collects tangible evidence of its presence.

Every drifter sets off to the herring grounds with about a hundred nets. Once a favourable spot has been found the nets are cast with military precision over the side of the ship to form a great two-mile barrier just below the surface of the sea. The nets are kept suspended in the water by large, round canvas floats called buffs, which are attached to the mighty curtain as it is shot from the decks. Then, if the currents are favourable, the shoals will be caught and netted as the ship drifts quietly on the tide.

While it is a fairly simply job in fair weather to shoot away the nets, it is hard and gruelling work to haul them in again. The task may take anything from three to four hours, and a good deal longer when the drifter is being buffeted by heavy seas, with angry waves breaking over the decks. And sometimes, especially in the early autumn, a gale will suddenly spring up when operations are in progress, making things doubly difficult, and even hazardous for the crew.

Loading the buffs at Great Yarmouth. These are buoyant canvas floats that support the fishing nets under the surface.

Before deciding to haul in the whole outfit, the drifter skipper will order the first half dozen nets to be brought aboard for a preliminary inspection. If the yield looks at all promising, then the work is begun in earnest. As each laden net comes slipping over the deck rails it looks just like a sheet of gleaming silver. The fish are rapidly shaken out and as they pile up on the boards they are shifted down to the hold with big wooden spades.

Then follows the traditional "full steam ahead" back to port, where the first drifter-men home win the highest prices at the opening auction sales of the day. Nowadays a price-pooling arrangement at the herring ports ensures at least (*Continued on page 428*)

Transferring fresh herrings to barrels for salting at Great Yarmouth.

Using the Meccano Gears Outfit "A"

A Beam Bridge for Outfit No. 6

THE Gears Outfit "A" can be put to very good use with Outfit No. 6, and one of the models it is possible to build with this combination is the working beam bridge shown in Fig. 1. Bridges of this type are not popular in this country but many are in operation in other parts of the world, where they are particularly suited to the local conditions.

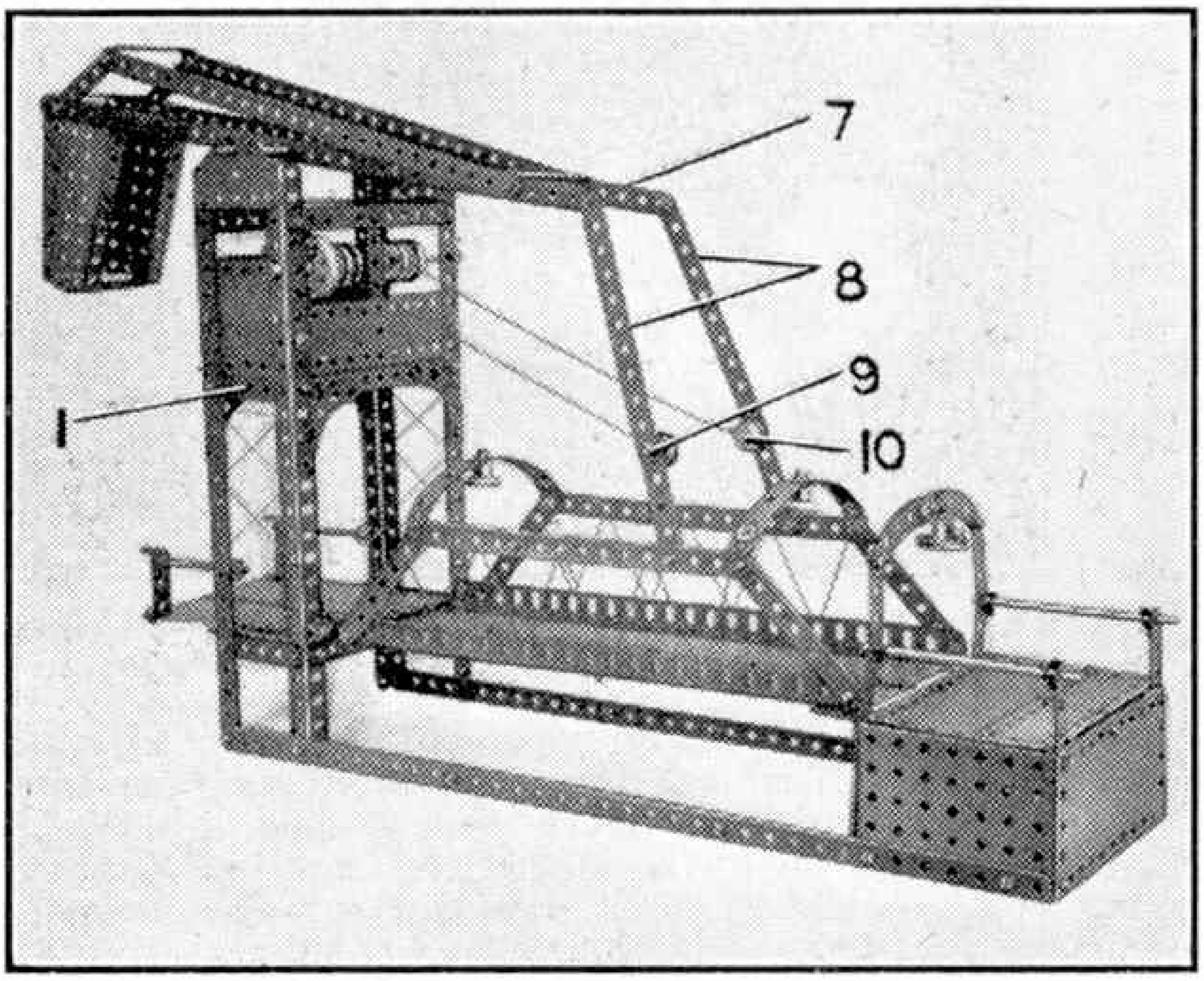


Fig. 1. A balanced beam lifting bridge built from Outfit No. 6. It is operated by a No. 1 Clockwork Motor through gears from a Gears Outfit "A."

Construction of the model should be started with the tower, the main supports of which are two $12\frac{1}{2}$" Angle Girders and four $12\frac{1}{2}$" Strips. These are bolted to a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate 1 and connected by $5\frac{1}{2}"$ and $2\frac{1}{2}"$ Strips near the lower ends. A No. 1 Clockwork Motor is bolted to the Flanged Plate in the position shown in Fig. 2. A 50-tooth Gear 2 meshes with a $\frac{3}{4}"$ Pinion on the Motor shaft, and further reduction is provided by a $\frac{1}{2}"$ Pinion 3 meshing with a 57-tooth Gear 4 on a 2" Rod. This Rod carries a $\frac{1}{2}"$ Pinion that engages a $1\frac{1}{4}"$ Contrate 5, which is fixed on a 6" Rod that carries also four 1" Pulleys forming the winding drums.

Two Semi-Circular Plates are bolted to the tower, and the top is filled by two $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates. The front is partly filled with a $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate, and one side is completed by a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate. The other side is left open to allow access to the Motor levers.

Two $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plates forming the roadway approach are attached to the $5\frac{1}{2}"$ Strips near the bottom, and the remaining space is filled by two $2\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plates. The handrails are represented by 3" Screwed Rods fixed to $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips and to Fishplates bolted to the $12\frac{1}{2}"$ Strips.

The other approach is made by connecting two $3\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plates by a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate, and a compound plate

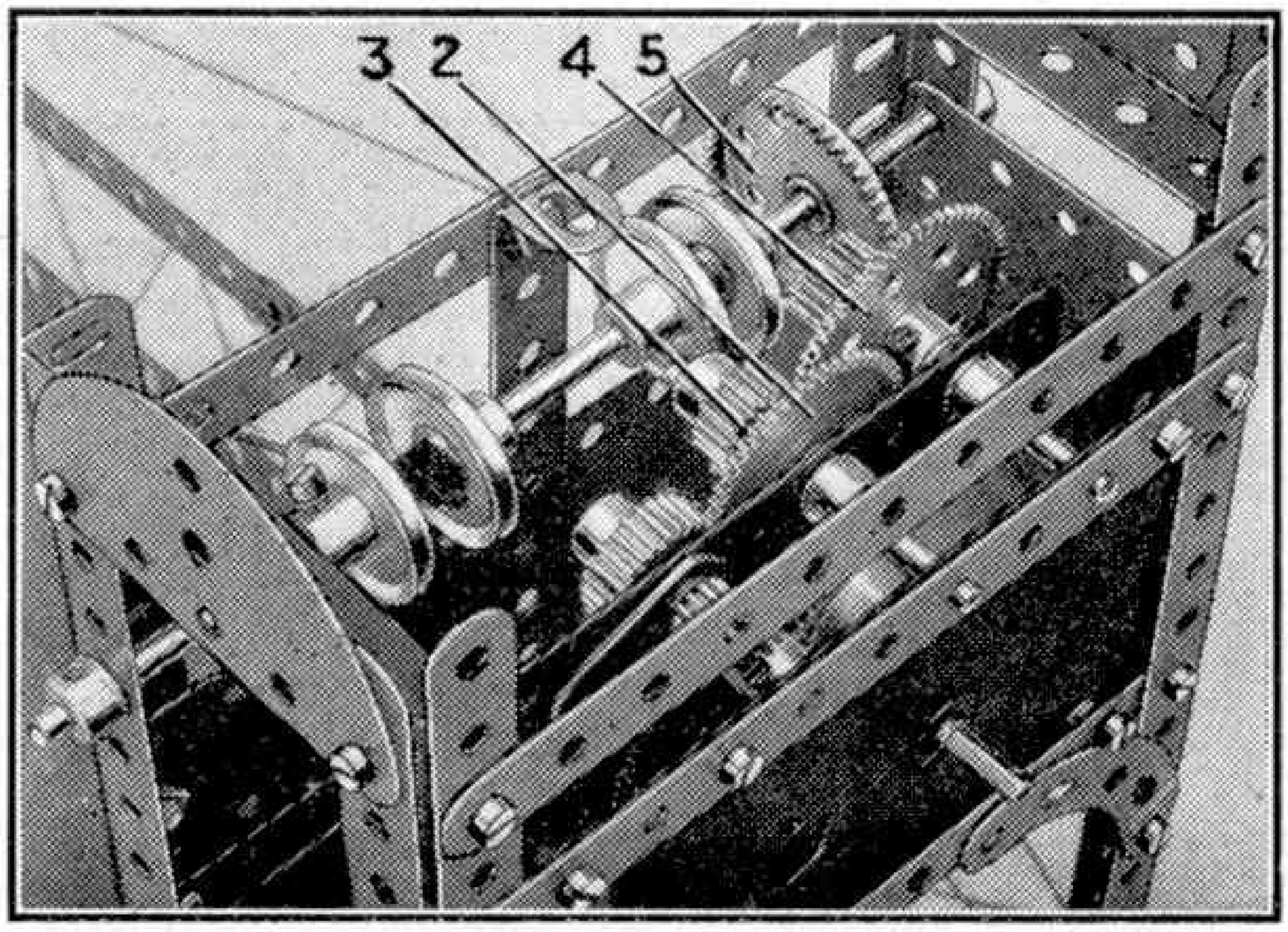


Fig. 2. This illustration shows the assembly of the gearing and position of the driving Motor in the beam bridge.

consisting of a $4\frac{1}{2}''$ $\times 2\frac{1}{2}''$ and a $2\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plate. The top is filled with a $5\frac{1}{2}'' \times 2\frac{1}{2}''$ and a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate, and these are attached to $3\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips 6, and also by Angle Brackets to the front and back plates. An arch is formed by two $5\frac{1}{2}''$ Strips and $2\frac{1}{2}''$ Curved Strips that are connected by a $1\frac{1}{2}''$ Strip. The 1" Pulley representing the lamp is attached to the $1\frac{1}{2}''$ Strip by an Angle Bracket. Two $1'' \times 1''$ Angle Brackets bolted to the front of the approach form stops upon which the bridge rests when in the lowered position.

The roadway of the span consists of two $12\frac{1}{2}''$ Strip Plates edged by $12\frac{1}{2}''$ Angle Girders. To the Angle Girders $3\frac{1}{2}''$ Strips are bolted diagonally and these are connected by two 8" compound strips made by joining $5\frac{1}{2}''$ and 3" Strips. Formed Slotted Strips are attached to the compound strips by Obtuse Angle Brackets, and the $\frac{1}{2}''$ Bolts joining them also carry

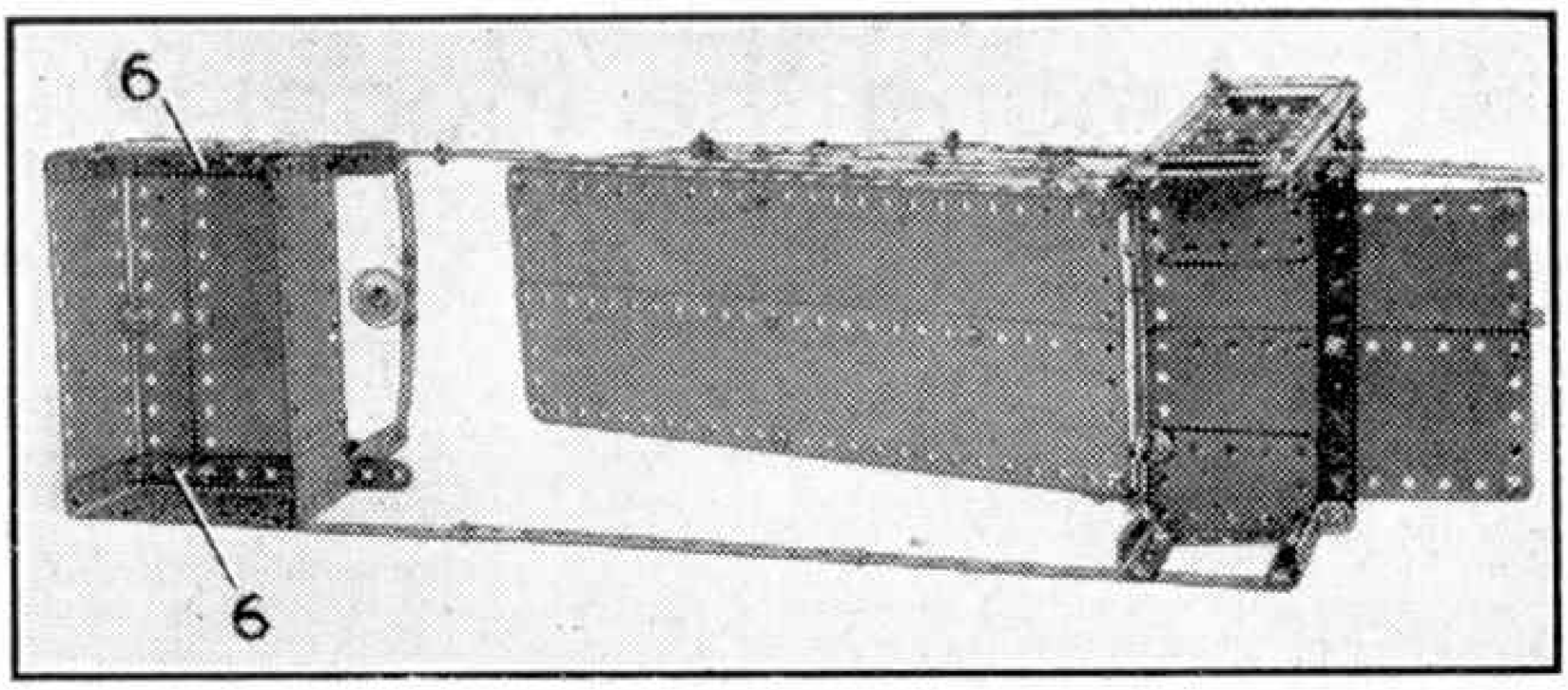


Fig. 3. An underneath view of the bridge.

$\frac{3}{4}''$ Contrate Wheels representing lamps. Cord is tied to the sides of the span to represent bracing as shown. The span is pivotally attached by lock-nutted bolts to Angle Brackets bolted to the Angle Girders of the tower.

The beam is formed by bolting two $12\frac{1}{2}''$ Strips, extended by $5\frac{1}{2}''$ Strips 7, to Flanged Sector Plates. These Sector Plates are connected by $2\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips and extended upwards by $2\frac{1}{2}''$ Strips. The Strips are connected by a Double Angle Strip, the bolts also holding $12\frac{1}{2}''$ Strips, which are attached five holes from the end of the compound strip. The beam pivots on a 6" compound rod formed by two 3" Rods connected by a Rod Connector. Strips 8 are compound, each consisting of a $5\frac{1}{2}''$ and a $2\frac{1}{2}''$ Strip, and they are joined by a Pivot Bolt 9 and a $\frac{3}{4}''$ Bolt 10, which also carry $\frac{1}{2}''$ Pulleys. The Cords by which the span is raised are attached loosely to the $\frac{1}{2}''$ Pulleys and then tied to the operating Rod in the tower, between the 1" Pulleys.

The handrails of the approach on which the span rests are formed by Rods passed through $2\frac{1}{2}''$ Strips bolted to the front and rear plates. The Rods are held in position by Spring Clips.

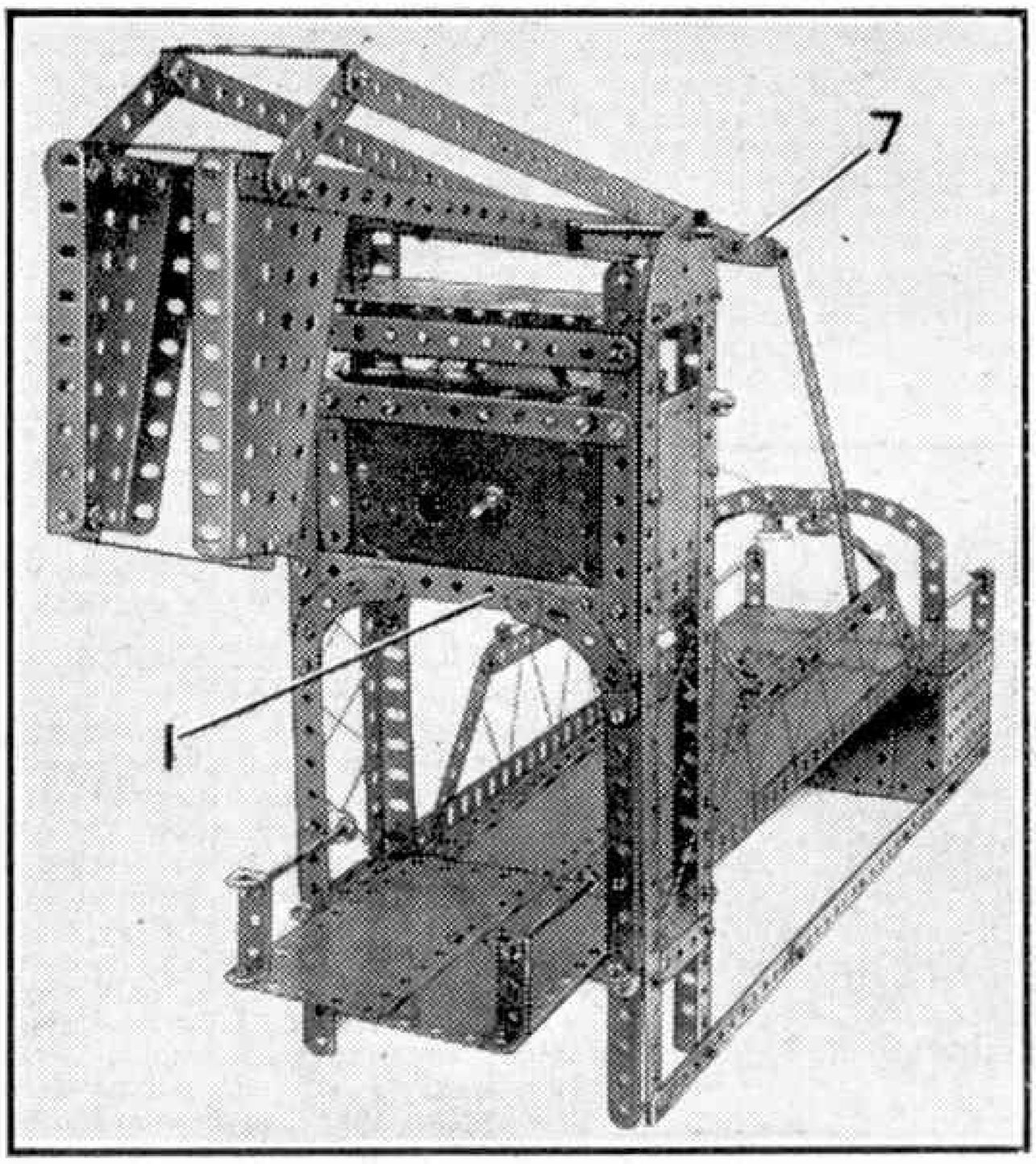


Fig. 4. A semi-end view of the beam bridge.

Parts required to build model Beam Bridge: 12 of No. 1; 13 of No. 2; 4 of No. 3; 2 of No. 4; 10 of No. 5; 2 of No. 6a; 4 of No. 8; 2 of No. 10; 14 of No. 12; 2 of No. 12a; 4 of No. 12c; 1 of No. 14; 2 of No. 15b; 2 of No. 16; 2 of No. 17; 5 of No. 22; 1 of No. 23; 1 of No. 23a; 9 of No. 35; 118 of No. 37; 12 of No. 37a; 15 of No. 38; 1 of No. 40; 2 of No. 48; 6 of No. 48a; 2 of No. 48b; 1 of No. 52; 2 of No. 53; 2 of No. 54; 4 of No. 59; 2 of No. 80c; 2 of No. 90; 4 of No. 90a; 2 of No. 111a; 4 of No. 111c; 1 of No. 115; 1 of No. 147b; 2 of No. 188; 4 of No. 189; 2 of No. 190; 1 of No. 191; 4 of No. 192; 2 of No. 197; 1 of No. 213; 2 of No. 214; 4 of No. 215; 1 No. 1 Clockwork Motor; Gears Outfit "A."

Among the Model-Builders

By "Spanner"

A MECCANO DISPLAY BRIDGE

One of the collection of Meccano models to be seen at the Stand of Meccano Ltd., at the British Industries Fair in London this year, was the fine arch bridge illustrated on this page. This realistic model is roughly 5 feet in length and is very heavily built, the main bridge girders being compounded and solidly bolted together. The dignified design of the towers, built mainly from red enamelled parts, and the contrasting green of the sturdy arch itself, combined to present a very striking and realistic effect. At the B.I.F. the size of the bridge was emphasised by streams of Dinky Toys vehicles displayed on the roadway.

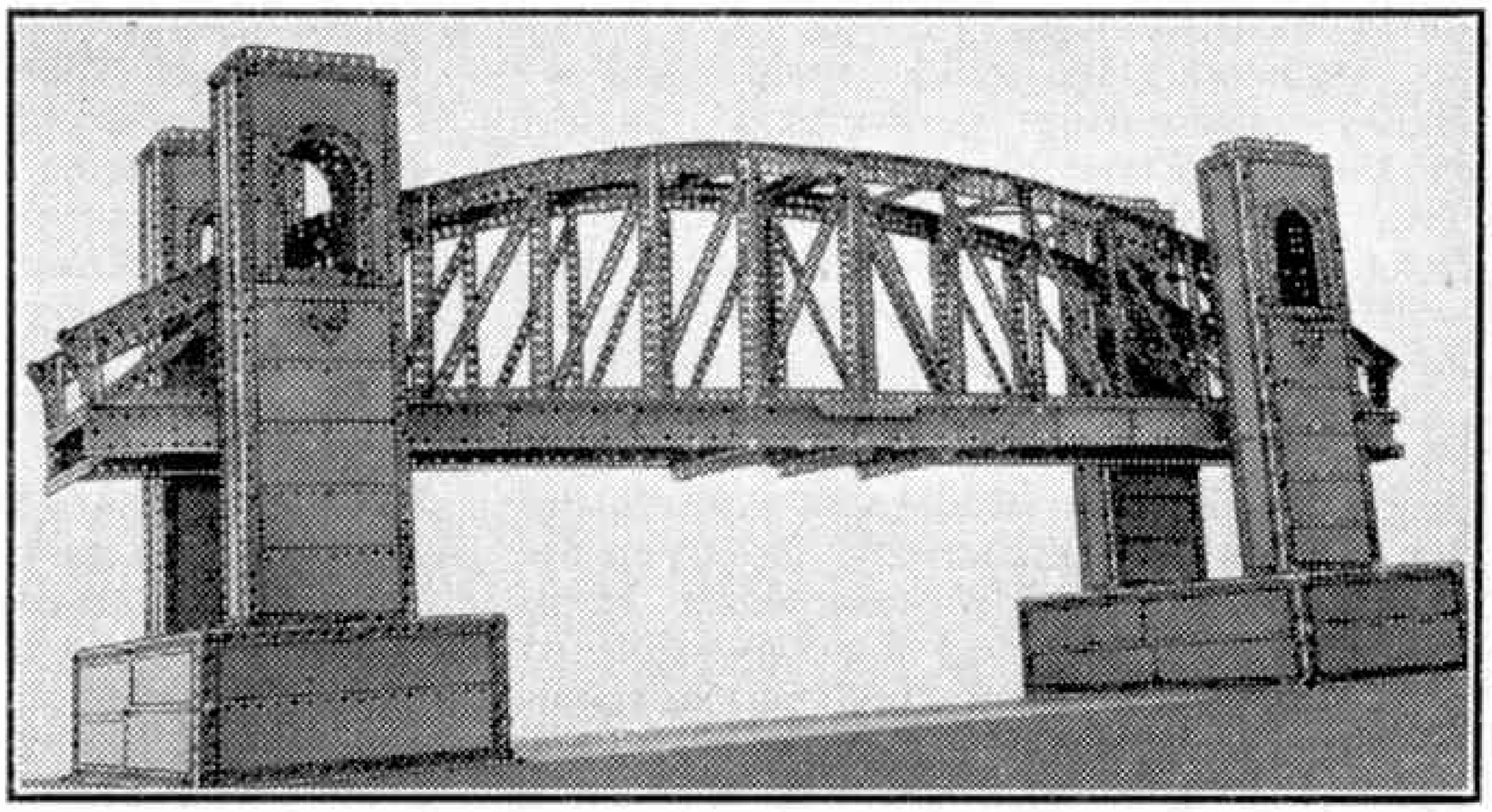


Fig. 1. This sturdy arch bridge was one of several large models exhibited at the British Industries Fair in London, last May.

HOW TO USE MECCANO PARTS

Circular Strip (Part No. 145)

The Circular Strip is a very useful part. It is 7½" in diameter overall, and is a great help in the making of large circular structures, such as fly-wheels and in assembling built up roller bearings. In the latter it forms a means of supporting the rollers and is shown used in this way in Fig. 2. It will be seen from the illustration that the Circular Strip is in the form of a ring, and it carries four Double Brackets which provide bearings for 1½" Rods, each of which is fitted with a ½" Pulley. Each Pulley is spaced from its Double Bracket by four Washers, so that it runs between the rims of two Hub Discs. In a model such as a crane, one of the Hub Discs would be bolted rigidly to the top of the tower, and the other would be fixed to the underside of the jib.

It will be noticed that the Circular Strip has four slots cut in it in addition to the circular equi-distant holes. These slots often are of great value in allowing for the sideways adjustment of Strips, Brackets or other parts bolted to the Circular Strip in the assembly of various structures.

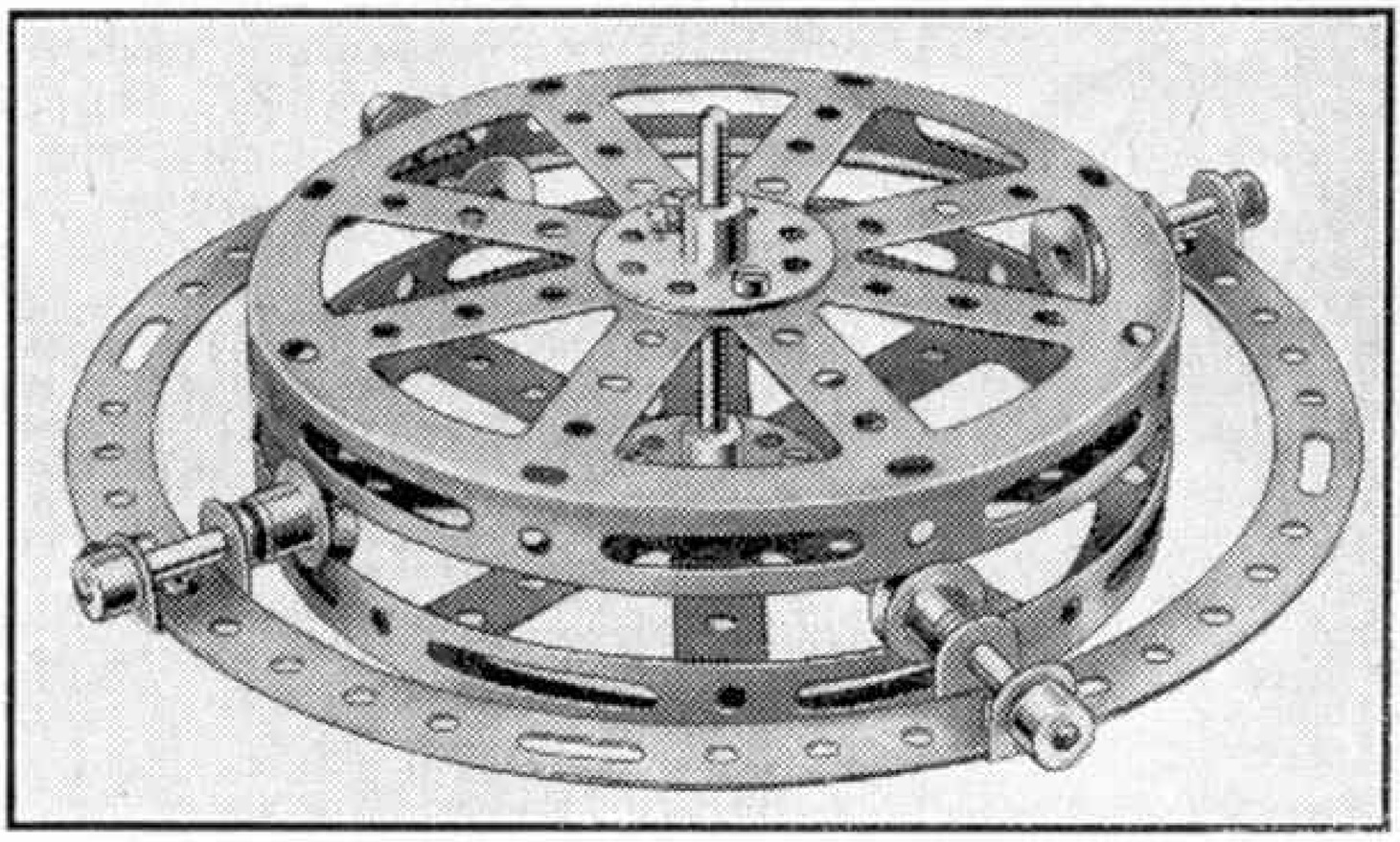


Fig. 2. Hub Discs and a Circular Strip form the main parts of this useful roller bearing.

CORD DRIVING BELTS

R. Roberts, Birmingham, who is an enthusiastic builder of small models that he drives by means of belts made from Meccano Cord, says that he finds this method quite satisfactory if the tension of the belt is carefully adjusted, but that sometimes it is difficult to obtain just the right tension and the belt is apt to slip. Roberts says that he overcomes this by rubbing the Cord with a piece of resin, or by powdering a little resin and then sprinkling it on the Cord after it is tied around the Pulleys, or in the case of hoisting Cords, attached to the winding drums.

In some cases where the belt does not have to make a complete revolution, as for example in hauling the trolley along the boom of a gantry or hammer-head crane, tension can be given to the Cord by tying its ends to the ends of a Tension Spring (part No. 43). The length of the endless belt made in this way should be such that when it is in position over the driving Pulleys the Spring is extended slightly. This arrangement will keep the belt in satisfactory tension and no slipping will occur.

AUTOMATIC REVERSING MECHANISM

In the May issue of the "*M.M.*" I described an automatic reversing mechanism designed to operate the control lever of the E20R Electric Motor. This device was designed to reverse the drive by automatically changing the direction of rotation of the Motor armature, and it could therefore be used only with a reversible Motor. I have received since then enquiries from readers for details of an automatic mechanism that can be used with a non-reversing Motor, and this month I am glad to illustrate an efficient arrangement in which the

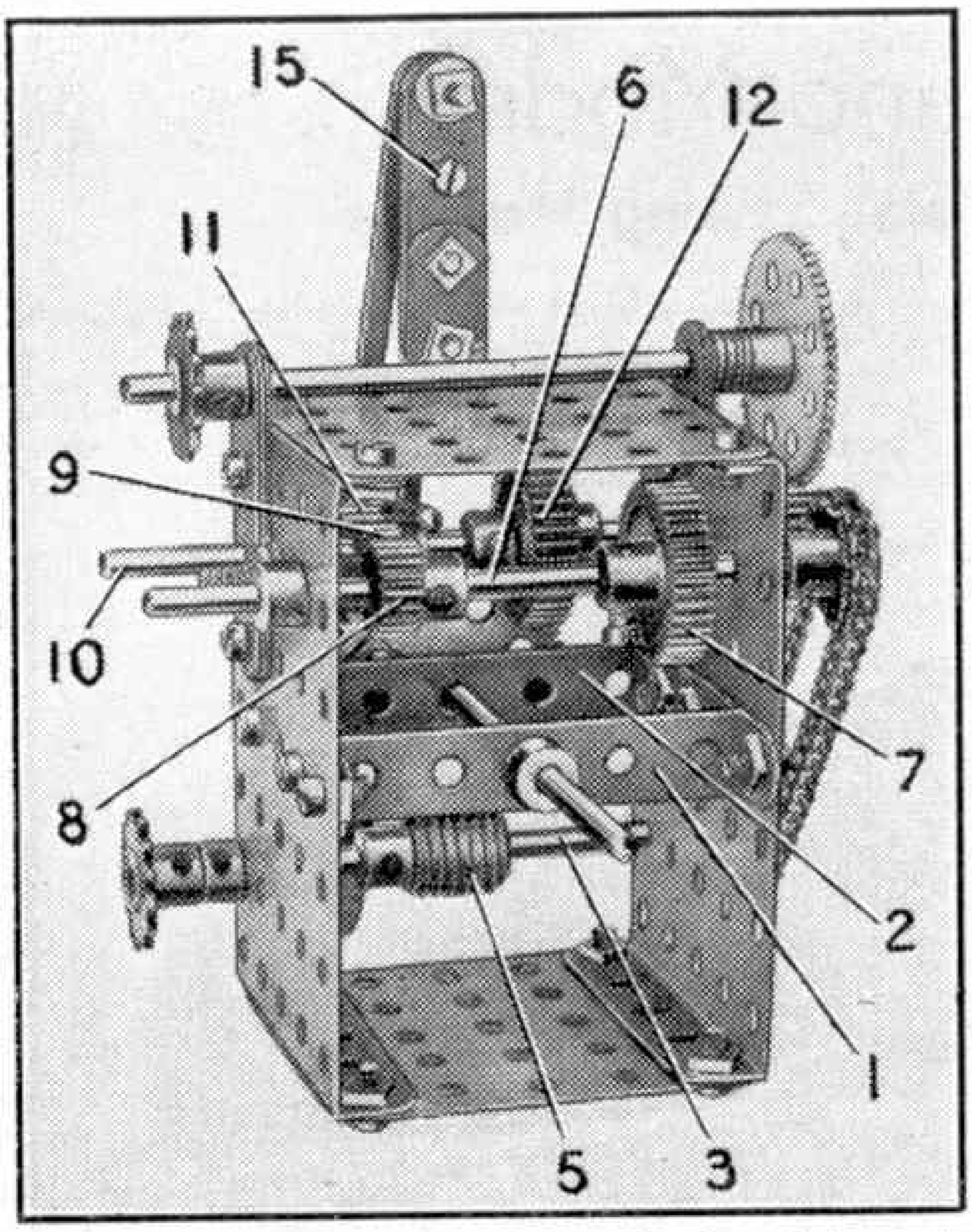


Fig. 3. An automatic reversing mechanism that can be applied to many different models. With its aid models such as transporter bridges can be operated continuously without attention.

reverse drive is obtained through a separate gearbox. This mechanism is shown in Figs. 3 and 4.

Many Meccano models can be adapted for continuous unattended working by including an automatic reversing device in the driving arrangements, and readers will therefore find wide scope for using the mechanism illustrated in Fig. 3 in their own models. For example, cranes can be made to carry out a definite sequence of movements, and the carriages of models such as transporter bridges and coaling plants, can be arranged to travel backwards and forwards, with a pause at each end of the travel for "loading" purposes.

The mechanism is housed in a framework across the centre of which two 2½" × ½" Double Angle Strips 1 and 2 are bolted.

The input shaft 3 is fitted with a ¾" Sprocket to take the drive from the Motor, and it carries at its other end a second ¾" Sprocket 4. A Worm 5 is fixed on shaft 3 inside the housing. Sprocket 4 is linked by Chain to a ¾" Sprocket fixed on Rod 6. This Rod carries a 1" Gear 7 and a ½" Pinion 8, and is held in position by Collars. A ½" Pinion 9 is free to turn on a 1⅛" Bolt fixed to the housing by two nuts.

A sliding shaft 10 carries inside the housing a ½" Pinion 11 and a 1" Gear 12, and outside the housing a ½" diameter, ¾" face Pinion 13. Pinion 13 meshes with a 57-tooth Gear on the output shaft 14, which is mounted in 2" Strips bolted to the housing. Forward drive is obtained by sliding shaft 10 to the right, Fig. 3, so that Gears 7 and 12 engage. Reverse direction is provided by sliding shaft 10 to the left so that Pinions 8, 9 and 11 are in mesh.

Movement of shaft 10 is controlled by a 1⅛" Bolt 17 fixed in the centre hole of a 5½" Slotted Strip. The Bolt engages between the boss of Pinion 11 and a Collar fixed on shaft 10. The Slotted Strip is pivoted on a lock-nutted bolt attached to three 2" Strips 15.

A 57-tooth Gear 16 is fixed on a Rod mounted in Double Angle Strips 1 and 2, so that it is in mesh with the Worm 5. The Gear 16 is fitted with a Threaded Pin that engages in the slot of the Slotted Strip.

The Pinion 11 and the Gear 12 should be adjusted on their shaft so that they just clear Pinion 9 and Gear 7 respectively when the Slotted Strip is in a vertical position. The Gear 16 is driven constantly by the Motor, and the Slotted Strip is therefore moved from side to side by the Threaded Pin engaging the slot. The Bolt 17 transfers this movement to the shaft 10.

The number of revolutions made in each direction by shaft 14 can be varied by altering the positions of Pinion 11 and Gear 12 on their shaft. To obtain an even drive the Pinion and Gear must be adjusted so that each remains in mesh for the same period.

SUMMER HOLIDAY SIMPLICITY COMPETITION

The special Holiday "Simplicity" Competition announced in last month's "*M.M.*" is still open for entries in both the Home and the Overseas section, and we urge every reader who has not yet done so to send in an entry. *The contest is for simplicity models of subjects associated with summer holiday activities and pastimes*, and prizes will be awarded to model-builders who construct the most ingenious and attractive models *using the smallest number of parts consistent with a realistic appearance.*

Suitable subjects for the competition are to be found at almost every holiday centre, either at the seaside or in the country, while fairgrounds, with their many amusement machines, offer a very wide choice for displaying originality and novelty.

Competitors should send in either photographs or sketches of their models to "*Summer Simplicity Contest, Meccano Ltd., Binns Road, Liverpool 13.*" The sender's age, name and address must be written clearly on each illustration submitted.

There will be separate sections for Home and Overseas readers, and the following prizes will be awarded in each section. First, Cheque for £3 3s. 0d. Second, Cheque for £2 2s. 0d. Third, Cheque for £1 1s. 0d. Five prizes of Postal Orders for 10/6 and five of Postal Orders for 5/-. The closing dates are, Home, 30th September; Overseas, 31st December.

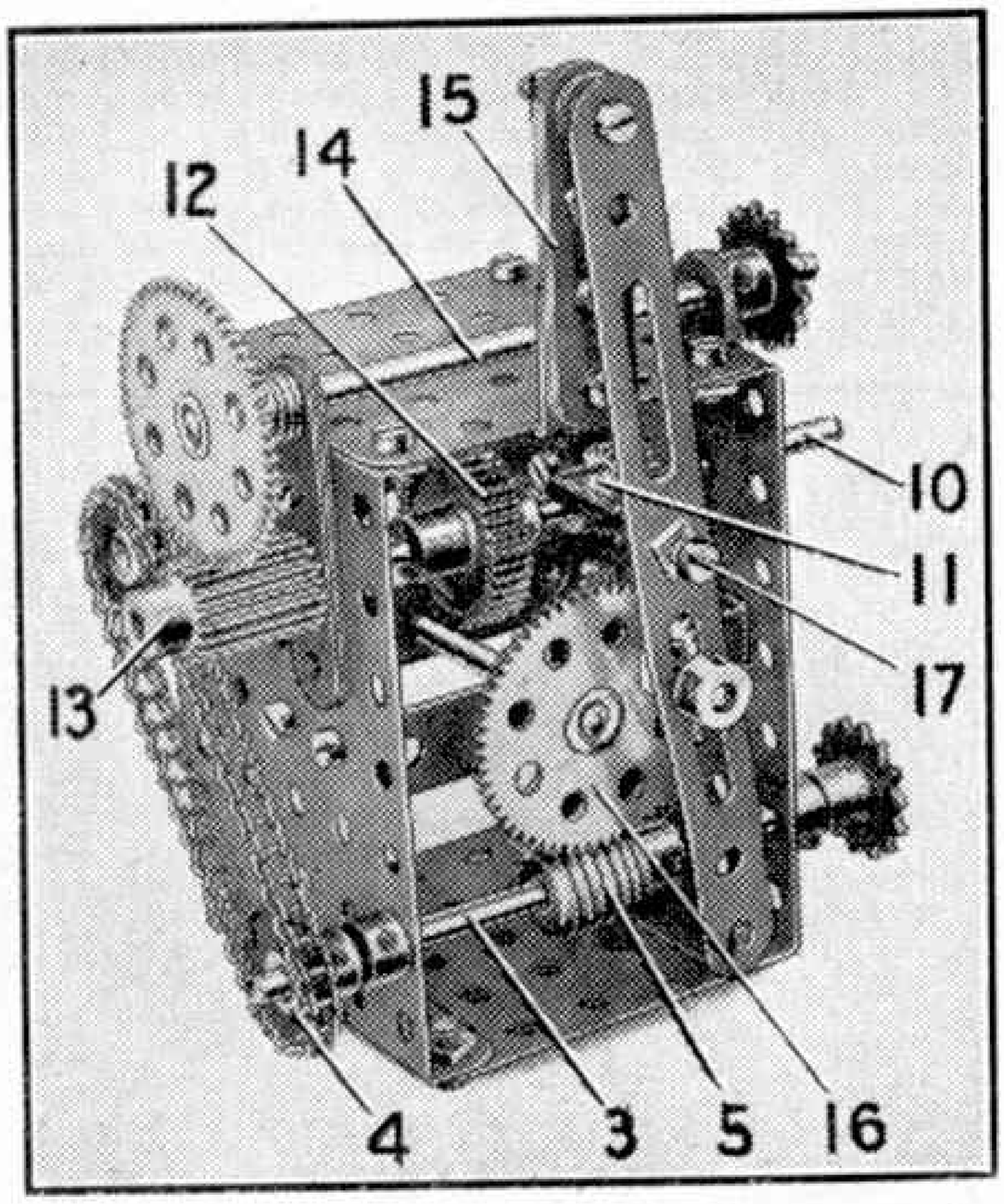


Fig. 4. An opposite view of the automatic reversing mechanism to that shown in Fig. 3.

New Meccano Models

Motor Cycle and Metal Sawing Machine

ONE of our new models this month is a motor cycle, which is based on a somewhat similar model that won for Bryan Hoyle, Deepcar, near Sheffield, a prize in an "*M.M.*" model-building competition. This model is shown in Figs. 1 and 2. The petrol tank is represented by a 5½" × 1½" Flexible Plate 1 bent to a U-shape and attached to a 1½" × ½" Double Angle Strip 3. A 1½" and a 2" Strip, together with a 1" Triangular Plate, form the sides of the petrol tank, which are attached to the Double Angle Strip 3.

The saddle consists of three Flat Trunnions attached to a Sleeve Piece, and two chimney adaptors form the tool box. Saddle springs are represented by Washers on ½" Bolts, which are held to a Double Angle Strip 4. Two 2½" Strips 5 are attached to the Double Angle Strip 4 and a second pair are bolted to them to represent the back stays. A Flat Trunnion and a 1½" Strip bolted to the Strips 5 form the frame of the motor cycle. A 3" Strip 7 bolted to a 2½" × 1½" Flexible Plate at one end and held under the Double Bracket 11 completes the construction of the frame.

The engine cylinder consists of Fishplates locked to two Screwed Rods by nuts, and one end of it is supported in the Flexible Plate 1 that forms the petrol tank. The other ends of the Screwed Rods are held by nuts in a 1½" Strip 2; two 1⅛" Bolts hold the Fishplates at their other end to a Double Angle Strip 6. Two Wheel Discs representing the engine casing are bolted to the Double Angle Strip 6. A 2" Rod mounted in the Discs carries a ¾" Sprocket 10. A 2½" × 1½" Flexible Plate forms the base of the engine casing. This is fixed at both ends to Double Angle Strips, which are attached to the Wheel Discs and Strips 5.

The model is fitted with twin exhaust pipes, each of which is made by attaching a Rod and Strip Connector to the Wheel Discs as shown. The Rod and Strip Connector is then fitted with a 2½" Rod, which carries at its other end a second Rod and Strip Connector. Two Fishplates bolted to it form the mouth of the exhaust pipe. The kick-starter is a Threaded Pin locked on a Fishplate attached to the Flat Trunnion 8.

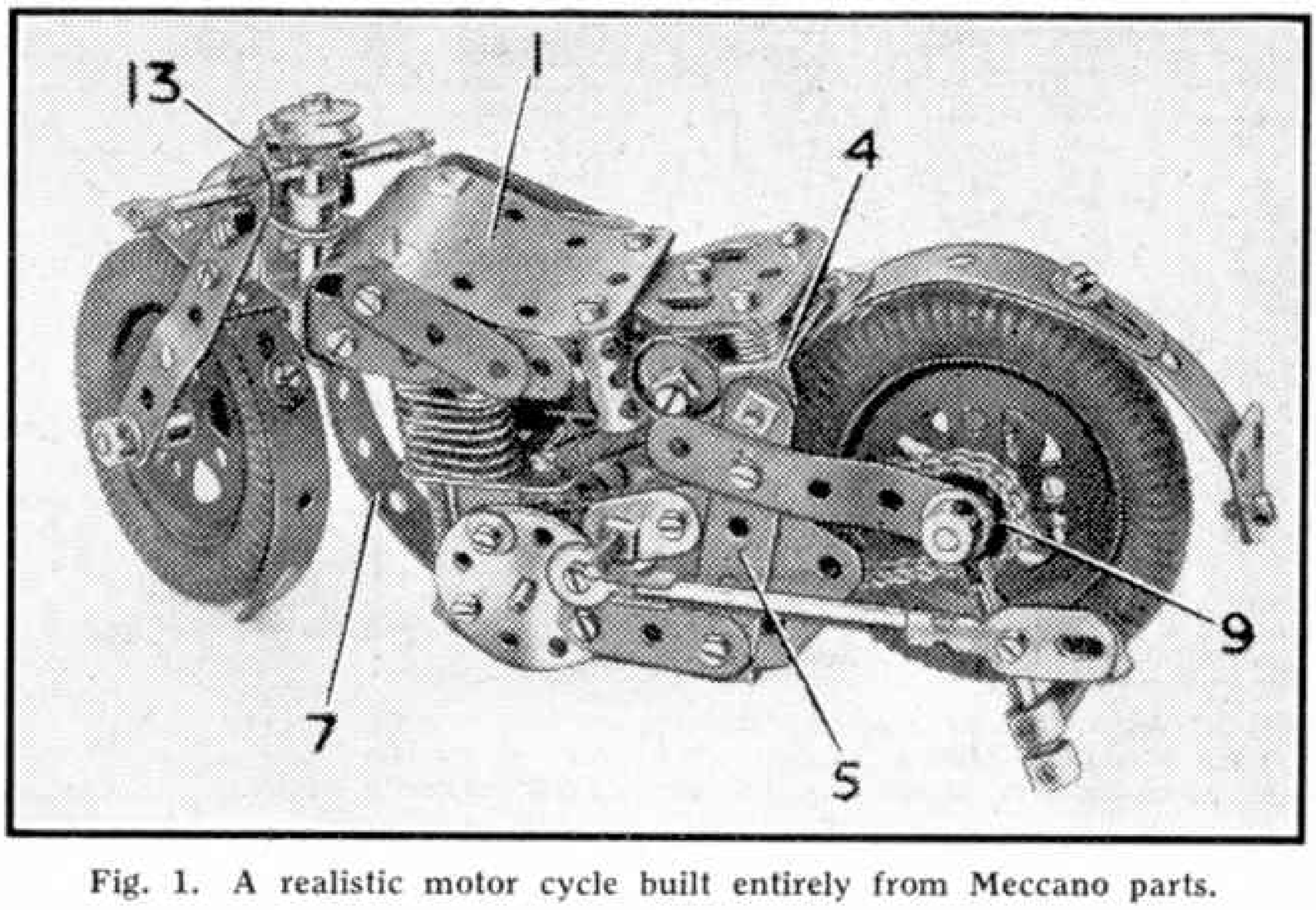


Fig. 1. A realistic motor cycle built entirely from Meccano parts.

The carburetter, represented by Couplings, is attached to the rear of the petrol tank by ⅜" Bolts. Two 3½" Strips represent the front fork and they support a 1½" Rod that carries also a 2" Pulley fitted with a Motor Tyre. The Rod is held in place by Collars. The top of the fork is fitted with five Double Brackets as shown. The first Bracket holds in place the mudguard which is made by bolting two Formed Slotted Strips together. A ½" loose Pulley represents the headlight, and two further Double Brackets bolted to the fork with the Bracket 12 form the steering head. The fifth Bracket has an Obtuse Angle Bracket attached to it and a ½" loose Pulley represents the speedometer.

A 2" Rod forming the handlebar is journalled through the fork head and the Bracket 13 and is held in place by Spring Clips; a Cord Anchoring Spring represents the throttle. The rear mudguard is made from two Formed Slotted Strips bolted together. It is attached to the Double Angle Strip 4, forming the saddle support, by an Obtuse Angle Bracket. A 1" Triangular Plate represents the number plate and is bolted to the Formed Slotted Strips.

The rear wheel is driven by

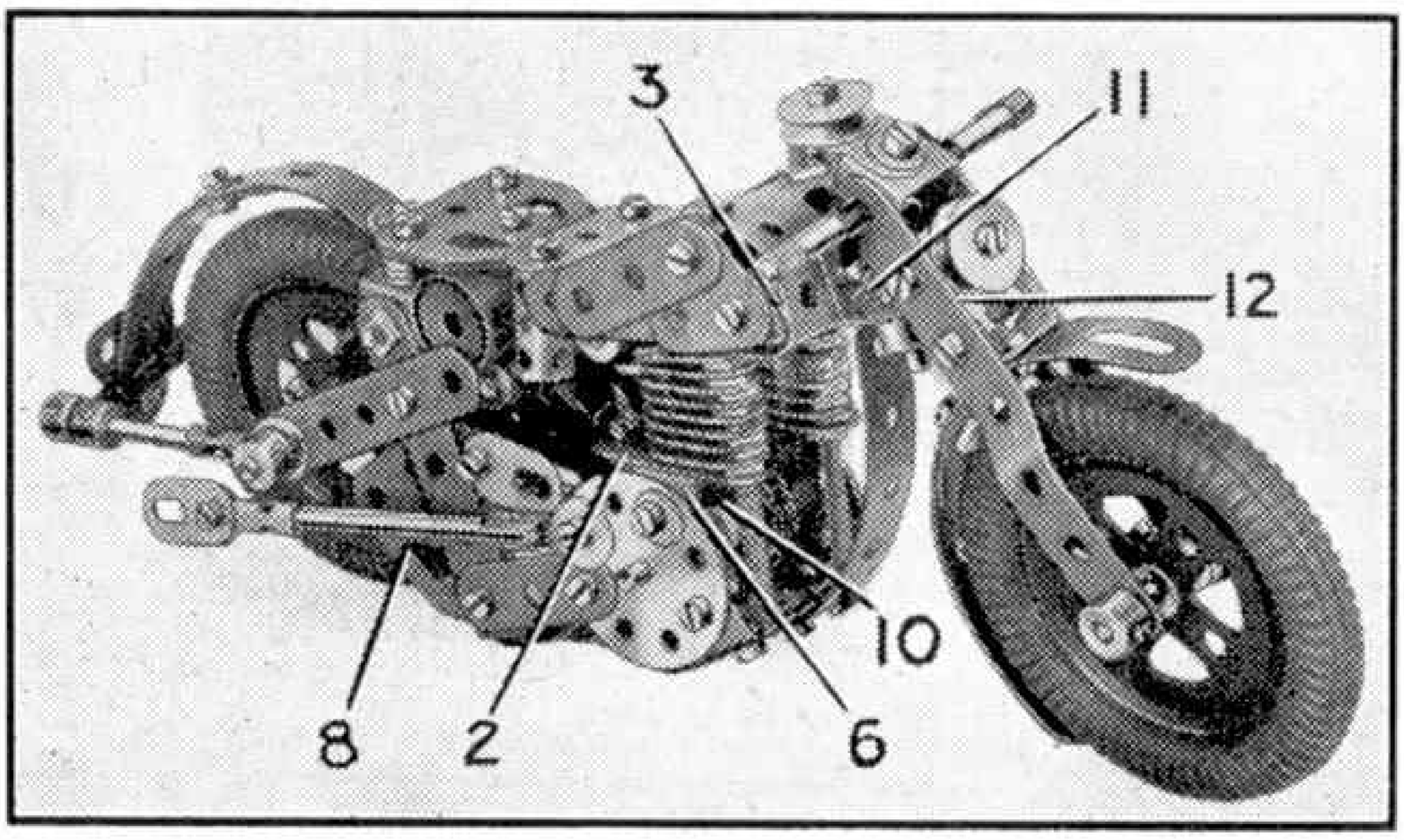


Fig. 2. The motor cycle seen from the "off" side.

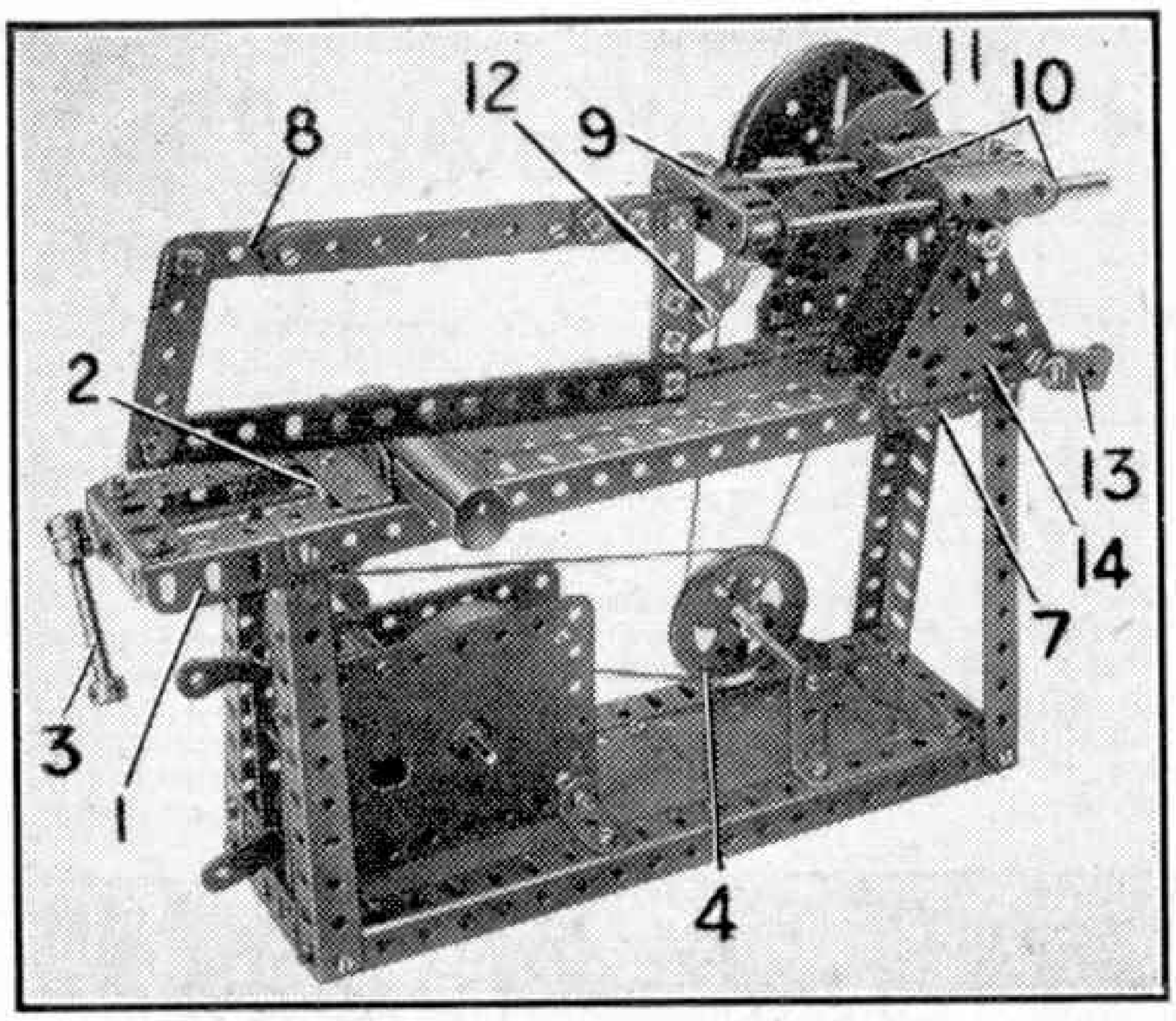


Fig. 3. A mechanical metal sawing machine driven by a No. 1 Clockwork Motor.

Sprocket Chain passed around a ¾" Sprocket 9 on the same axle and the ¾" Sprocket 10. The stand for the cycle consists of two Rod and Strip Connectors placed on each end of the axle, and each fitted with a 1" Rod that carries also two Collars. A Tension Spring is attached between one pair of Collars as shown.

Parts required to build model Motor Cycle: 2 of No. 3; 1 of No. 4; 4 of No. 5; 2 of No. 6; 6 of No. 6a; 22 of No. 10; 6 of No. 11; 2 of No. 12c; 3 of No. 16a; 2 of No. 17; 6 of No. 18a; 2 of No. 20a; 2 of No. 23; 2 of No. 24a; 2 of No. 35; 42 of No. 37; 32 of No. 37a; 18 of No. 38; 2 of No. 43; 5 of No. 48; 13 of No. 59; 4 of No. 63; 3 of No. 77; 3 of No. 80c; 1 of No. 94; 2 of No. 96a, 2 of No. 111a; 6 of No. 111c; 2 of No. 111d; 1 of No. 115; 5 of No. 126a; 2 of No. 142a; 1 of No. 163; 2 of No. 164; 2 of No. 176; 1 of No. 188; 1 of No. 189; 6 of No. 212; 4 of No. 215.

The model shown in Figs. 3 and 4 is a type of metal sawing machine used in raw material stores, tool rooms and machine shops for cutting through bar and strip metal. There are several types of these machines, and we have chosen one of the most popular as the basis for our model.

The base of the model consists of two 9½" Angle Girders, joined by two 3" Girders. The space between them is filled with two 5½" × 2½" Flexible Plates, and 5½" Angle Girders that form the table supports are bolted at each end. These are joined at the top by two 9½" Angle Girders, which are extended by 2½" Girders 1. The ends are connected by 2" Angle Girders. The table is formed by a 5½" × 1½" Flexible Plate.

The vice jaws are two 2" Angle Girders, one of which is bolted to the table. The other Angle Girder is attached to a Threaded Boss 2 carried on a 5" Screwed Rod. This Rod is mounted in an Angle Bracket bolted to the fixed 2" Angle Girder of the vice, and in the 2" Angle Girder at the end of the table. A 2" Rod 3 forms the handle, and is held loosely in a Collar locked on the end of the Screwed Rod.

A No. 1 Clockwork Motor is bolted in the position shown and fixed to the base and table supports by 1" × 1" and 1" × ½" Angle Brackets. A 1" Pulley Wheel on the Motor shaft is connected by a 10" Driving Band to a 2" Pulley 4, which is locked on a 2½" Rod mounted in two Flanged Brackets. This Rod carries also a 1" Pulley 5, from which the drive is taken to a 3" Pulley on a 3½" Rod 6. Bearings for this Rod are three 2½" Triangular Plates, two of which are attached to the table by 2½" Angle Girders. A third Triangular Plate 14 is secured by a 1½" Angle Girder 7 and a 2½" Angle Girder.

The saw blade is represented by a 6½" Rack Strip, which is bolted to a frame consisting of a 5½" Strip 8 and two 2½" Strips. Four 3½" Strips are also bolted to the 5½" Strip. A 2" Angle Girder 9 is attached to the frame by a 1" × 1" Angle Bracket, and two Cranks carrying 5" Rods are bolted to it. These Rods form slide rods and they slide in a guide made by connecting two 2" Strips 10 with 1½" × ½" Double Angle Strips. The guide block is covered by a 2½" × 1½" Flexible Plate bent to the required shape and attached by a ½" Bolt to an Angle Bracket fixed to a 1" Triangular Plate bolted to one of the 2" Strips 10. The guide is pivoted on Rod 6 by two Fishplates bolted to the 1½" × ½" Double Angle Strips.

The sawing movement is produced by the Triple Throw Eccentric 11. The arm of the Eccentric is extended by a 2½" Strip, which is lock-nutted to a 1" Triangular Plate 12 that is bolted to the frame of the saw. A 1" × ½" Angle Bracket 13 attached to the 2½" Triangular Plate 14 by a lock-nutted ½" Bolt, forms a stop for holding the saw in a raised position when not in use.

A metal bar clamped in the vice is represented by two Sleeve Pieces.

Parts required to build Metal Sawing Machine: 1 of No. 2; 4 of No. 3; 1 of No. 4; 4 of No. 5; 3 of No. 6; 2 of No. 6a; 4 of No. 8a; 4 of No. 9; 2 of No. 9c; 5 of No. 9d; 5 of No. 9e; 1 of No. 9f; 2 of No. 10; 4 of No. 12; 2 of No. 12a; 2 of No. 12b; 2 of No. 15; 1 of No. 16; 1 of No. 16a; 1 of No. 17; 1 of No. 19b; 1 of No. 20a; 2 of No. 22; 72 of No. 37; 6 of No.37a; 20 of No. 38; 2 of No. 48; 6 of No. 59; 2 of No. 62; 1 of No. 64; 3 of No. 76; 2 of No. 77; 1 of No. 80; 1 of No. 110a; 1 of No. 111; 1 of No. 111a; 2 of No. 111c; 1 of No. 130; 1 of No. 139; 1 of No. 139a, 1 of No. 186b; 2 of No. 188; 1 of No. 189; 2 of No. 192; 1 No. 1 Clockwork Motor.

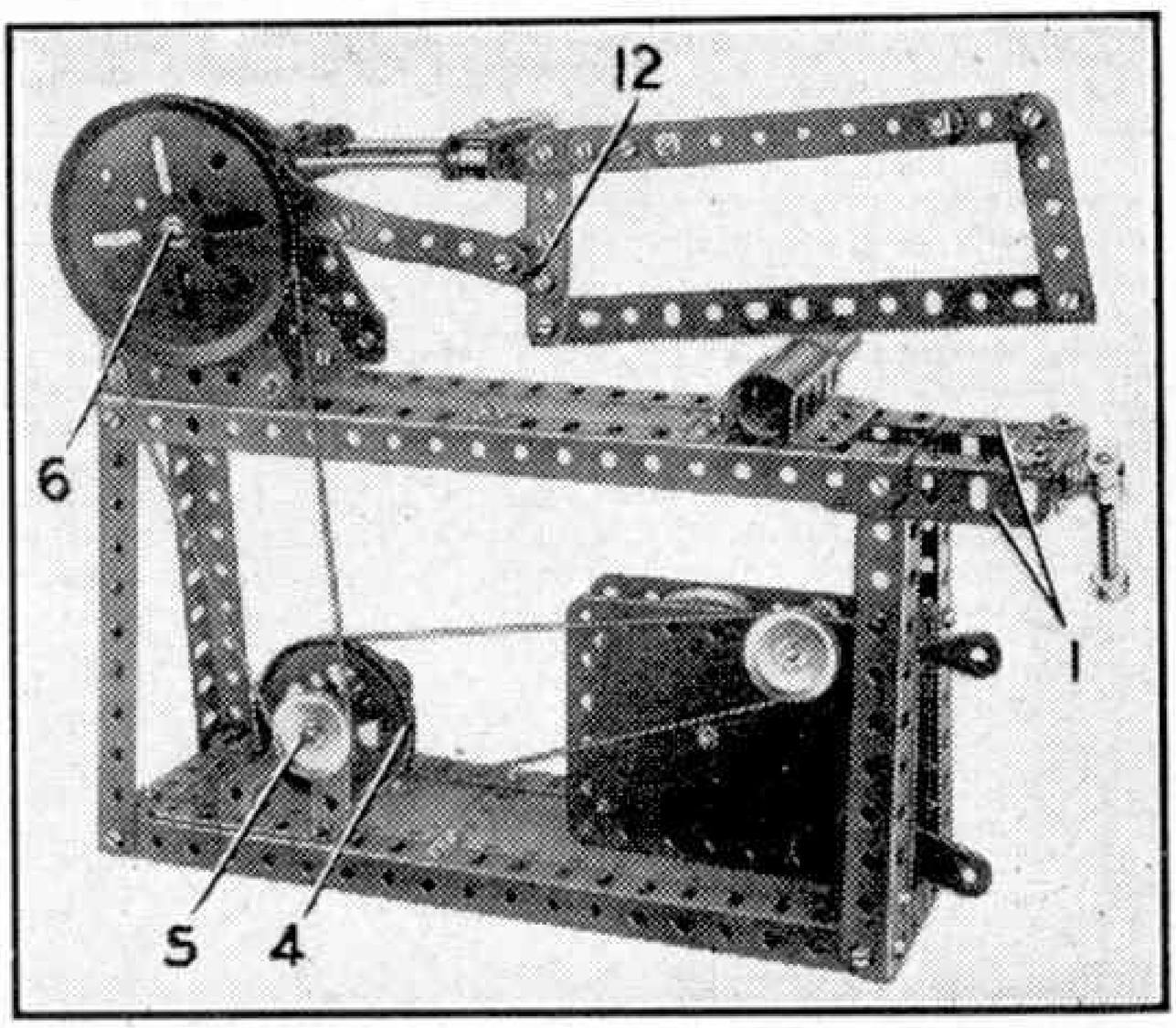


Fig. 4. Another view of the metal sawing machine.

Club and Branch News

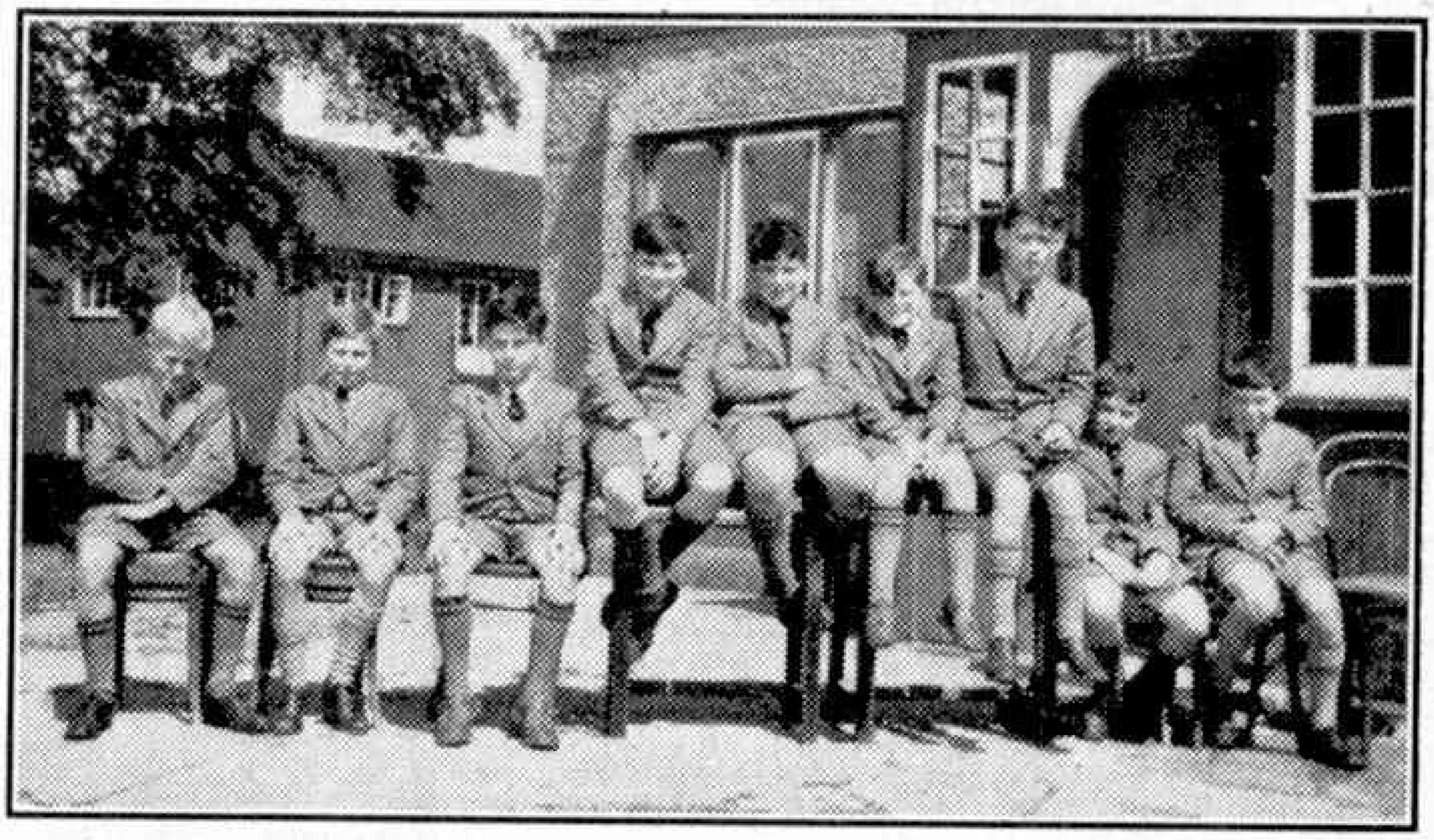
WITH THE SECRETARY

STEPS TO SUCCESS

The plans made and put into operation in September decide whether the work of the Winter Session will be successful or not. The important thing is to get agreement of all members to the programme for the indoor months, which must therefore be presented for approval at a general meeting. Discussions about the plans to be followed should have preceded the meeting, but if any member comes along now with a new idea he should be encouraged to explain it in full and its merits and drawbacks should be well canvassed. An idea suggested in this manner often proves to have been an inspiration, but it should not be adopted, even for trial, unless it is greeted with enthusiasm by members as a promising proposal.

In most Clubs, especially new ones, with keen members, everything seems to go very well indeed for a time. Then perhaps the Secretary is compelled to leave, or it may be that one or two of the leading members are no longer able to devote time to Club matters, and all at once the Club finds itself in difficulties. There is only one sure way to avoid this. This is to include younger members who learn how a Club is conducted, and become capable of filling the places of any officials or Senior members who are no longer able to give their services.

The best way to attract younger boys is to arrange a programme that will interest them and to do everything possible to make them feel at home in the Club. With this in mind I urge every Leader to form a Junior Section under the control of Senior members who are really sympathetic and helpful to younger boys. Other members should be encouraged to bring in recruits, relatives or friends, to build up the Section. Such recruits are the very life-blood of a Club, and an organisation that neglects them can look forward to only a short existence.



Members of the Highgate Junior School, Branch No. 524, of the Hornby Railway Company, outside their Branch headquarters. The Chairman is Mr. H. F. R. Miller, and the Secretary P. M. Cohen, who is fifth from the right in our photograph. This Branch was incorporated in March last, but already has a good layout and has arranged an Exhibition. A special feature of the programme is photography.

CLUB NOTES

ST. MICHAEL'S BOYS CLUB (PORTSMOUTH) M.C.—Under the Leadership of Mr. A. A. Foster, this newly affiliated Club has already made splendid progress. Models built include an omnibus and ocean liners. Outdoors members have visited Ryde, in the Isle of Wight, where boating on the Lake was enjoyed after locomotive spotting on the Isle of Wight Railway. Club roll: 12. *Secretary:* Mr. R. Selby, 5, Forest End, Waterlooville, Hants.

BORDEN GRAMMAR SCHOOL M.C.—A large layout was displayed at a Careers and Hobbies Exhibition organised by the Huntingdon Rotary Club, and was watched with keen delight by more than 2,000 visitors. Work is now in progress on the Club's Hornby-Dublo Railway. Visits have been paid to the Borough Water Works and to the Eastern Gas Board Gas Works. Club roll: 15. *Secretary:* S. Wood, 20, Harold Street, Queenborough, Kent.

CANADA

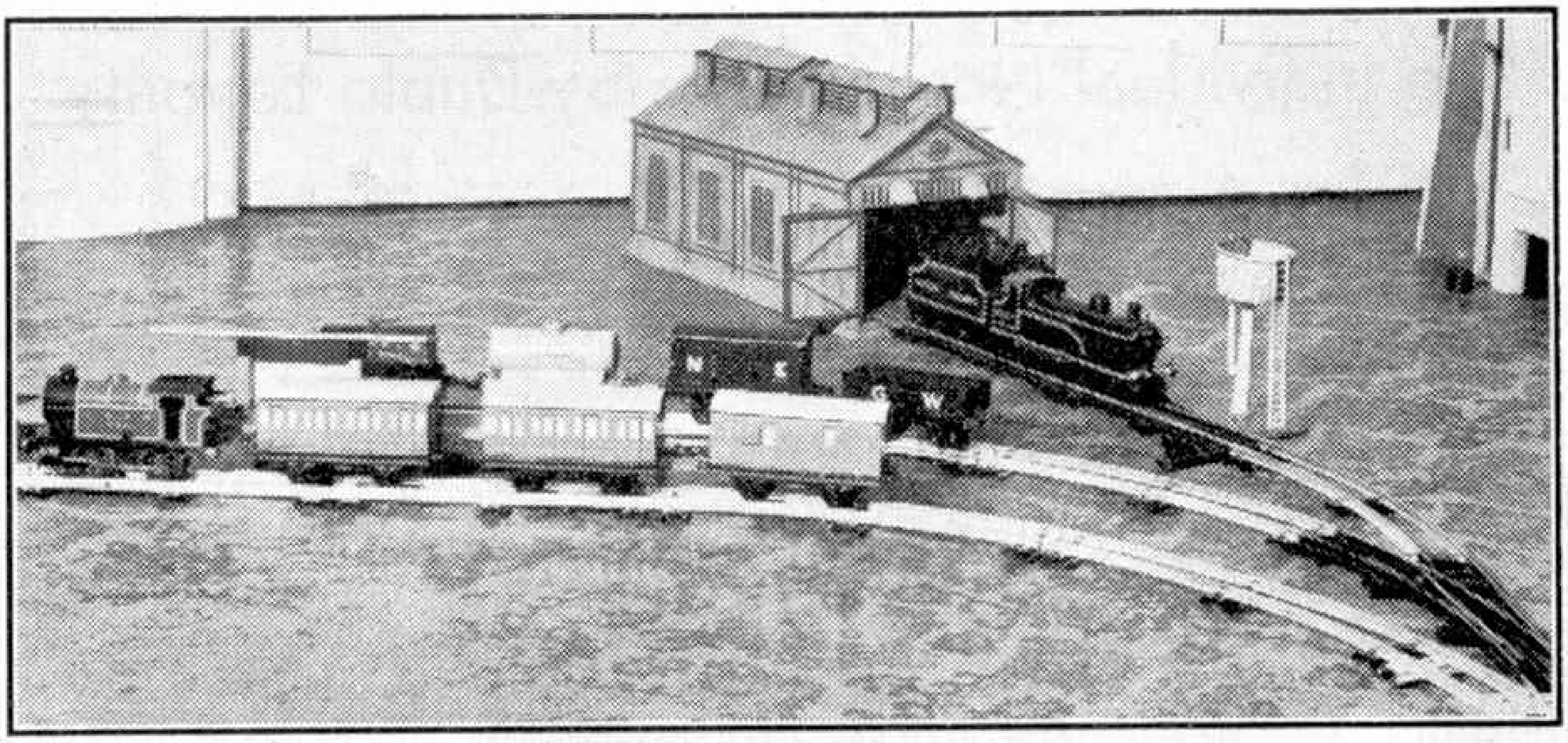
KIMOUNT (VANCOUVER) M.C.—The Leader and a group of members visited Victoria, Vancouver Island, for a model Exhibition. Members have been busy preparing models for display at the annual Pacific National Exhibition Hobby Show, and special prizes were offered by the Leader for those successful in the Show competitions. This year's entries were made in response to a special invitation, following on the excellent display made last year. *Leader:* Mr. B. I. Kershaw, 678, Homer Street, Vancouver, B.C.

BRANCH NEWS

RYDAL SCHOOL (COLWYN BAY)—An extensive goods yard has been added to the layout and the construction of a large locomotive depot is in hand. Interesting talks have been given by visitors and members. Crewe works and local sheds and signal boxes have been visited. *Secretary:* R. L. Paton, "Barbarians," Rydal School, Colwyn Bay.

HIGH CRAIGIE (PERTH)—Members are particularly enthusiastic about track meetings. More rolling stock has been obtained and good use is made of Dinky Toys. More Talks have been introduced and competitions organised. On a special outing members visited Dundee and Arbroath. *Secretary:* J. J. Duncan, "Dunrae," 41, Evelyn Terrace, Craigie, Perth.

MAGDALEN COLLEGE SCHOOL (OXFORD)—Special attention has been given to renovations and scenic surroundings. On a visit to Stratford Works the progress of locomotives under repair was followed from shop to shop. *Secretary:* R. A. Bowen, 33, Richmond Road, Oxford.



Part of the layout of David Morris, H.R.C. No. 109636, Reading. Two veteran Hornby clockwork locomotives are standing outside the engine shed, which is a pre-war Hornby accessory.

A Useful Hornby Layout Plan

THE illustrations on this page show the favourite layout of H.R.C. member David Morris, of Reading. David has the advantage that his father is still a keen Hornby Train enthusiast, and some of the equipment that formerly belonged to him is now in use on the present line.

The lack of a permanent site for the line, which requires a space 8 ft. by 9 ft., does not prevent successful operation or interesting working. Apart from the main circuit, which is continuous, there are several terminal or siding roads so arranged that continuous or point-to-point running can be practised. The stations on the railway are usually known as "*Reading*" and "*Henley*" respectively, although they do not carry nameboards. It aids operation to refer to them in this way, and of course it provides a certain amount of local interest.

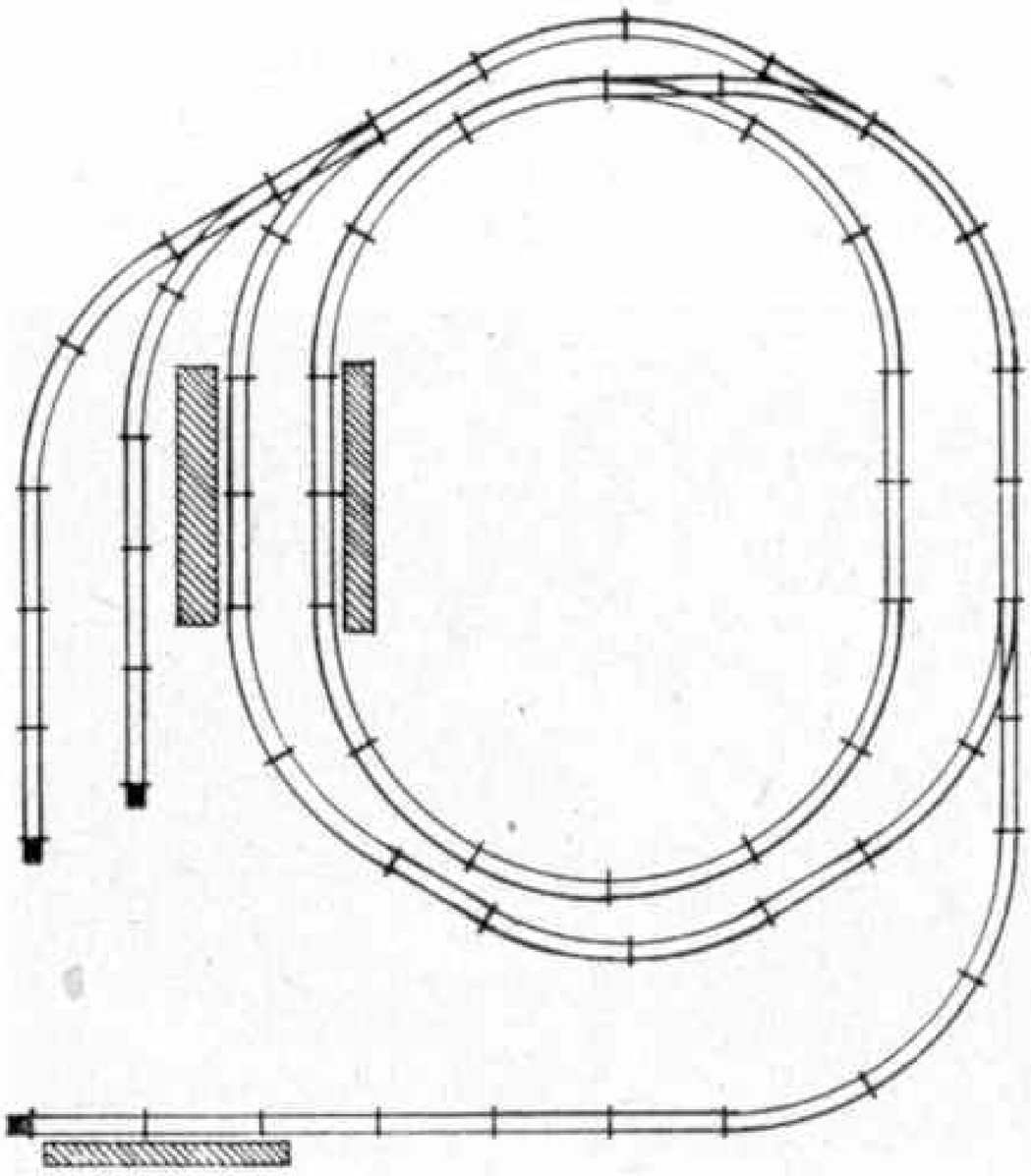


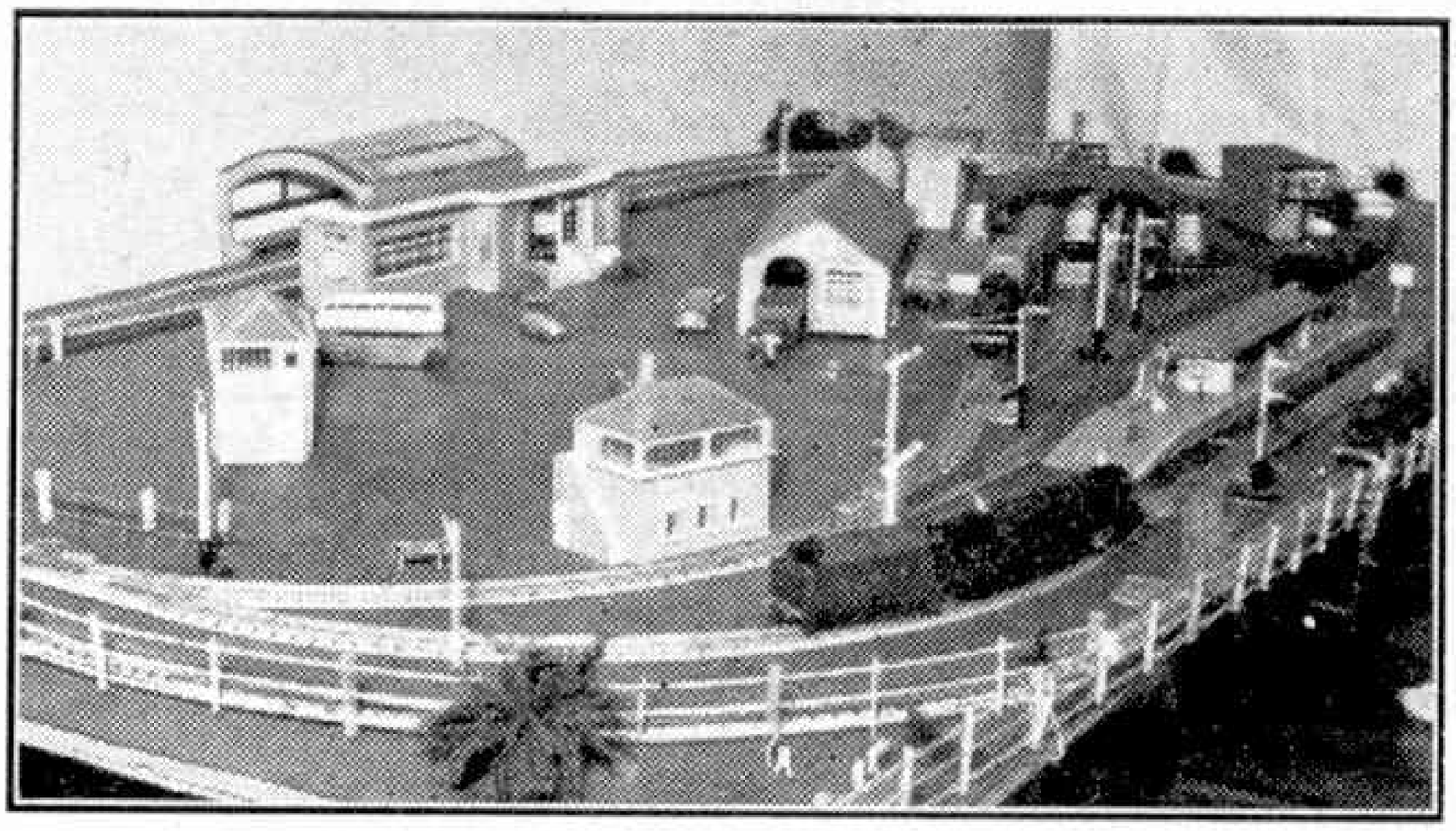
Diagram of the layout showing the rails required: 27 A2, 24 B1, 2 PR2, 3 PL2, and 3 Buffer Stops.

There are three Hornby engines in service on the line and each is used for all classes of traffic, for both goods and passenger trains are run. The only instance of a "one-engine" job is the use of the No. 101 Tank to form a push-pull train with two No. 1 Coaches. This unit operates on the branch line and is a convenient method of working, as there are no run-round facilities at the branch terminal. This train is usually known as "*Henley Flyer*" after the friendly nickname that is given in the district to local units of this kind.

The operators find that they can provide plenty of variety in the make-up of their goods trains and these do not become too long to manage within the limits of the present layout. The "Company," in this case father and son, are well satisfied with the progress of their system and are looking forward to its further development as the opportunity occurs.

The Individual Note in Hornby-Dublo Layouts

VARIETY of interest is one of the greatest advantages of the miniature railway hobby. There is always some fresh angle to consider in the development of a realistic railway system, and many individual owners give special attention to one particular aspect that appeals particularly to them. The two Hornby-Dublo miniature railway systems shown in the accompanying pictures are good examples of layouts of this kind. They occupy almost equal spaces, both are realistic and attractive in appearance and in operation, while each illustrates particular ideas of its owner.



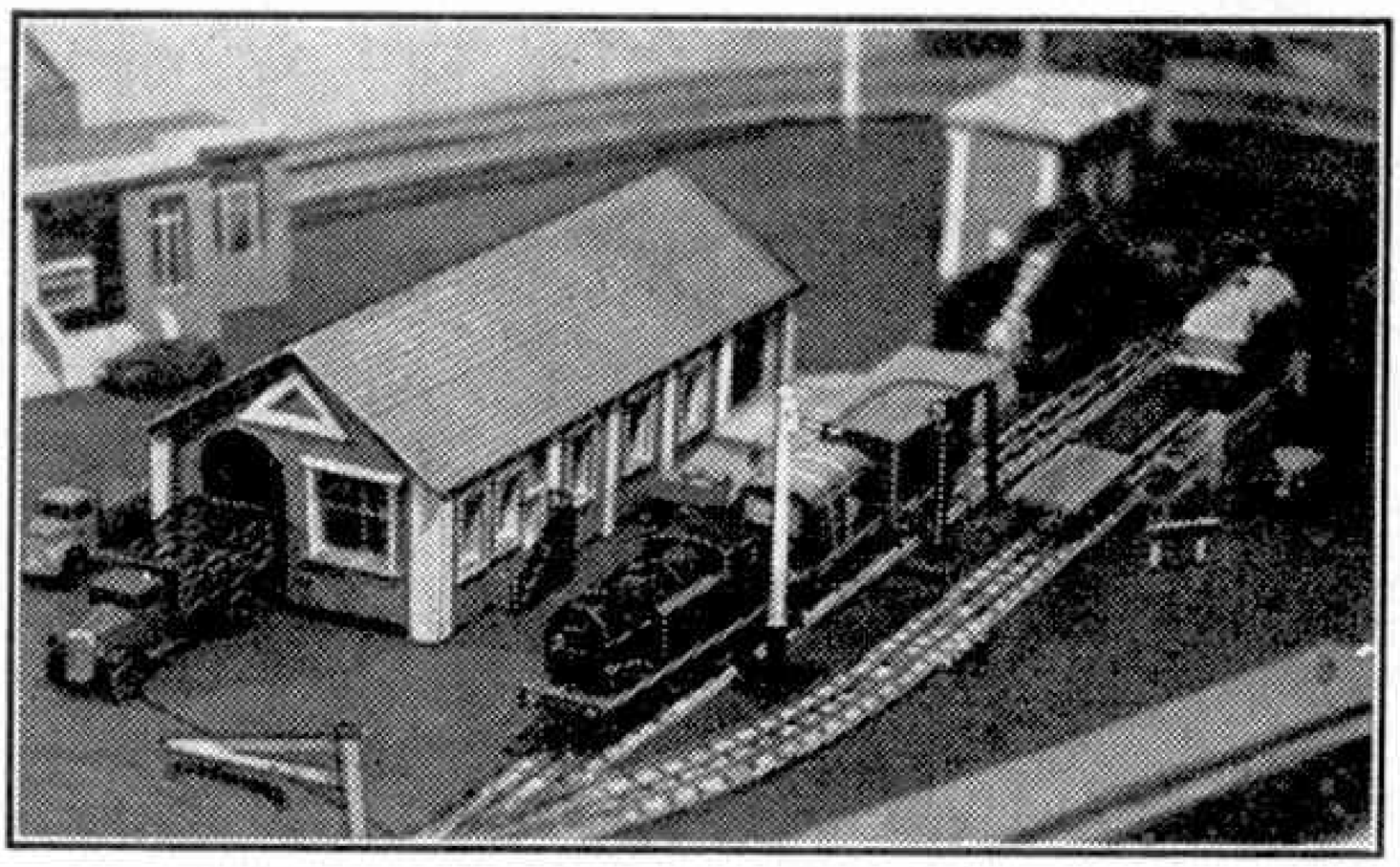
A general view of the Hornby-Dublo layout of James Jordan, Burton-on-Trent. Most of the accessories have been constructed at home.

The photographs on this page show parts of the layout of M. J. Jordan (H.R.C. No. 103292) of Burton-on-Trent, who has taken advantage of a space of 7 ft. by 3 ft. 6 in. to develop a system in which a realistic main line is the principal feature.

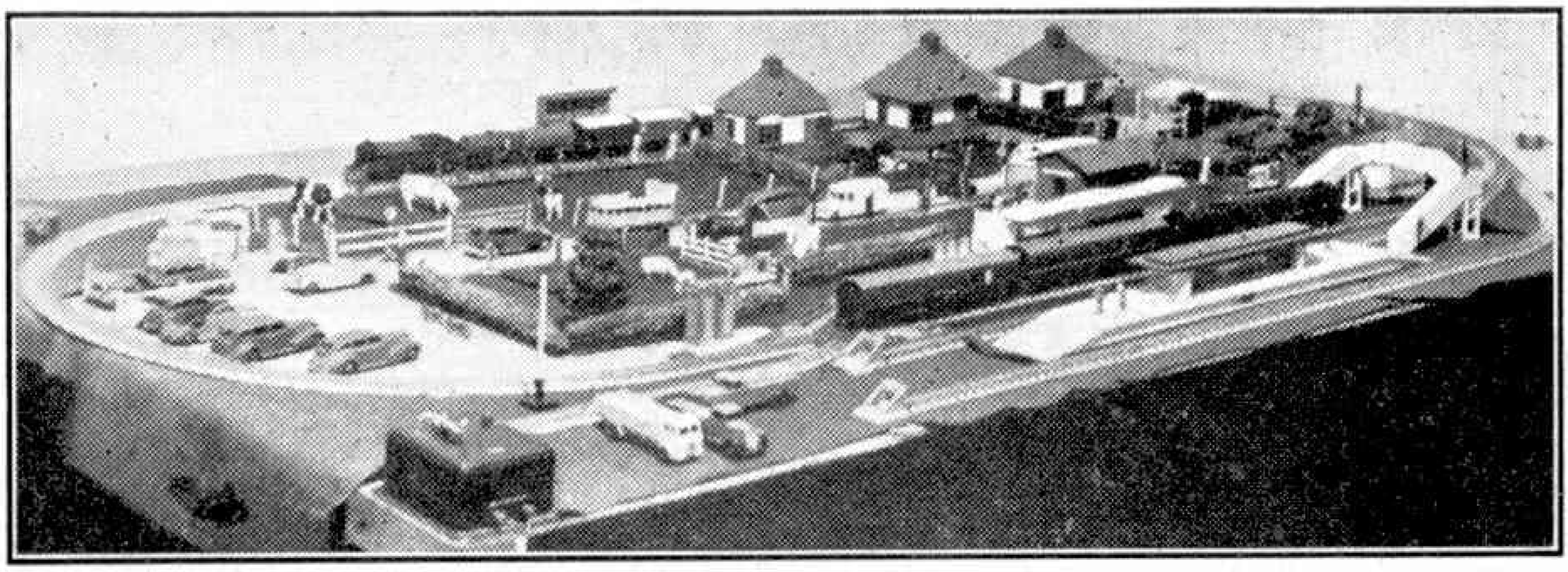
The track is very simple in general plan, consisting of a double track main line oval following the contour of the raised baseboard on which it is arranged. A loop line taken off the inner main line at each end of the oval becomes a platform track at one of the stations, which is of the island type. From this loop a diagonal connection is taken off which branches out into two goods sidings. Points are arranged to form facing and trailing crossovers between the inner and the outer main tracks. These points are separated by Isolating Rails, and as each main line has its own Transformer and Controller, independent control is afforded on each track. This of course is normal Hornby-Dublo practice nowadays, and it has been referred to several times in the *"M.M."* and in the Hornby-Dublo booklet *"Rail Layout Suggestions."*

The railway serves three stations, one being the island platform already mentioned, a Hornby-Dublo pre-war product. Another is an imposing main line station with all-over roof constructed, like many of the accessories in use on the layout, by our reader's father, Mr. James Jordan, who has taken a special interest in the engineering and constructional side of the railway's activities. The third station is of the smaller wayside type.

A goods platform and warehouse, signal boxes and a footbridge are other prominent accessories, while the correct lineside "atmosphere" is given by a system of



Freight operations at the goods platform and warehouse. Note the Dinky Toy motor vehicle backed up to the shed doorway.



The scenic Hornby-Dublo layout of T. M. Pearce, Wells, Somerset. Good use is made of Dinky Toys and other items of lineside interest.

fencing stoutly constructed of wire and steel strips. This was provided in the first instance to prevent trains from falling on to the floor in the event of any mishap and derailments; although really unnecessary now for this purpose it has been retained owing to its pleasing realistic effect.

The railway has five engines, two of these being 4–6–2 "Duchess" models for heavy express working, while the other three are standard Hornby-Dublo 0–6–2 tanks. There is one each of these in L.M.S., N.E., and G.W. livery respectively. They are used for goods work and all mixed traffic duties, empty stock working and so on.

Rolling stock is numerous and varied, especially the goods stock, and there are altogether about 35 separate vehicles. Express trains are composed of the L.M.S. type corridor stock well known in the "*Duchess of Atholl*" train sets. Goods stock includes various special types such as the Horsebox, some Tank Wagons and two "conflats" for container traffic that have been adapted from the standard underframes of damaged wagons. A miniature home-made container provides the load and this is secured to the wagon by elastic bands.

So far no definite system of timetable working has been practised, as the chief interest in working the line is in the shunting, marshalling and other railwaylike movements made possible by the inclusion of Hornby-Dublo Isolating Rails and Uncoupling Rails at strategic points. No doubt when the railway is extended, as it will be according to present plans, an appropriate system of regular train working will be devised.

Attention to the lineside and scenic effects generally is among the important features of the layout shown at the head of this page. This is the work of H.R.C. member No. 116353, Toni Michael Pearce, of Wells, Somerset, who has produced an attractive countryside setting for his railway. Here again the railway itself is not elaborate, but it provides sufficient track for realistic working of passenger or goods traffic, as required.

The main line station and the lineside fences have been made at home, Balsa Wood being extensively employed as in many miniature construction jobs nowadays.

As the "people" in Hornby-Dublo or Dinky Toy land have to live somewhere, there are three miniature houses which show up prominently in the photograph. These are neat structures assembled from the well-known "Bayko" building sets.

At present there is only one engine, a "Duchess," but it is hoped to add one of the useful 0–6–2 Tanks later on. The engine of this type included in the photograph was borrowed from a friend for the occasion.

There is one Uncoupling Rail on the system, which adds to the interest of operations, and a special feature of the freight train working is that the loading and unloading of actual goods is practised. This merchandise is transhipped between train and road vehicles. Similarly, taxis and other motor cars meet each passenger train, although no actual movement of "passengers" is involved here. All the road vehicles for both goods and passenger traffic are from the Dinky Toys range. Some of the vehicles used as taxis are actually saloon type cars that have to act as private hire vehicles.

There is much to be said for road-rail running schemes of this kind. Many readers have developed ideas of their own in this direction, and several of their well planned and instructive layouts have been described in the "*M.M.*"

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Stamp Collecting

National Park Wonders

By F. Riley, B.Sc.

THE wonders of the National Parks of the United States provide the designs for a series of stamps of the very greatest interest. This series appeared in 1934, but collectors can readily obtain sets, which make really handsome album pages. In many of the parks colouring provides one of the chief attractions. For instance, in the Zion National Park are cliffs of gorgeous vermilion hues above which rise startling whites, sometimes surmounted by a cap of vivid red. The 8c. stamp of the issue does not reproduce these colours. Like other stamps in the issue it is in one colour, in this case a greyish green. Possibly other National Park stamps will appear in future in the United States, and in view of the development of colour in stamp printing some effort may be made to reproduce the hues that mark the rock and lake features of many of them.

The beginning of the United States National Parks system came nearly 80 years ago, when the Yellowstone region was established "as a pleasuring ground for the benefit and enjoyment of the people." The venture appealed so much to the imagination of the American people that it was followed by the creation of other National Parks in various parts of the country, and in Alaska and Hawaii. It is not surprising that the Yellowstone region should have been the first to become a National Park. It is volcanic and in it there are more and greater geysers than in all the rest of the world together. The most famous of these geysers is Old Faithful, which spouts often and with regularity, and it is Old Faithful in action that has been chosen for the design of the Yellowstone National Park stamp, the 5c. value, in this series.

Canyons figure largely in the series. The lowest value, 1c., is devoted to the Yosemite National Park, a wonderful valley with enormous rock walls that rise almost perpendicularly from its floor. El Capitan, the summit shown on the stamp, is 3,604 ft. in height, and Clouds Rest is more than 2,300 ft. higher than that. Wonderful waterfalls are a special feature of the Yosemite Valley. The Yosemite Fall drops 1,430 ft. in one leap, and immediately below it is the lower Yosemite Fall, with a further drop of 320 ft., the total equal to 11 Niagaras piled one on top of the other. The Ribbon Fall has a sheer drop of 1,612 ft.

The most famous canyon in the world, carved out through the ages by the Colorado, now forms part of the Grand Canyon National Park, and is seen on the 2c. stamp. This wonderful chasm, 218 miles long and a mile in depth, is a stupendous spectacle, with its highly coloured walls and the turbulent river flowing deep in its mysterious depths.

The 6c. value is of outstanding interest. It shows Crater Lake, the central feature of a great National Park in Oregon. The beginning of this Park can be traced back to Mount Mazama, a mighty volcano that no human eye ever saw, for in past ages its top was blown away by a series of terrific explosions, leaving only a yawning chasm. In this the snows and rains of countless years have left a great lake that in places is 2,000 ft. in depth. No stream flows into it or out of it, and its waters are unbelievably blue and silent, enclosed in a giant rock wall 30 miles or so in circumference.

One of the stamps, the 4c. value, is a reminder of a race that centuries ago inhabited America's Far West, for it shows one of the cliff dwellings of Mesa Verde National Park. To it the name of Cliff Palace has been given, but it was really a village with 200 rooms for family living and 22 sacred rooms for worship. Spruce Tree House, on the same mesa, once sheltered 350 inhabitants, and on the top of the great rock table are the remains of what is believed to have been a gigantic Sun Temple. Access to the buildings of the villages was gained by ladders.

The 5c. value of the series shows a picturesque mountain view in the Mount Rainier National Park reflected in the waters of Mirror Lake. Mount Rainier, an extinct volcano, is 14,408 ft. high and is remarkable for the complicated system of glaciers that descend from the snow and ice with which its summit is covered. The mountain is a wonderful spectacle and in its surroundings there is an unequalled wealth of sub-alpine flowering plants.

All of these stamps are worth close attention in themselves and because of the wonders of the National Parks they commemorate. Those dealt with are all in the west, but there are others in the east, including the great Smoky Mountains National Park in Tennessee and the Acadia National Park on the coast of Maine, the easternmost of the States.

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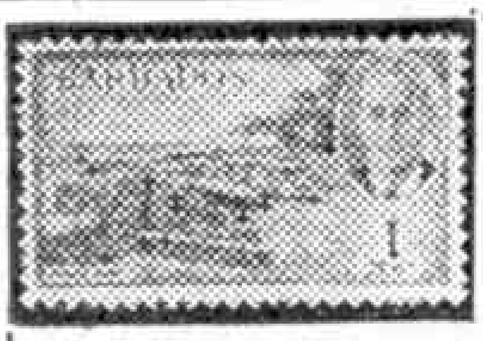

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For other Stamp Advertisements see also pages 424 and xv.

Stamp Gossip

and Notes on New Issues

By F. E. Metcalfe

THIS month it is more a question of which stamps to leave out than to find some suitable for illustrating, for among many others we have two outstanding sets to report for countries in our own Commonwealth. Before dealing with these do let us pay respects to the U.P.U. stamp which has been issued by Greece. Most countries have made the 75th Anniversary of the U.P.U. an excuse to bring out a new stamp or a set, and about as many have claimed that their effort was the best of the lot. Up to now the writer of these notes has felt inclined to back the emission of Australia, but surely nobody will want to pick out any other but the stamp illustrated. It is a beautiful effort.

The set of Mauritius issued on 1st July is a disappointment. Some of the designs are interesting enough, but the fact that this set and the one for North Borneo are printed in photogravure is perturbing for those who have always been so proud of the line engraved stamps of the various colonies.

Photogravure stamps are all right in their way, but they lack that substance which one has always associated with British stamps. As a rule a full line-engraved set generally cost a tidy sum, but the stamps seemed worth it somehow. A set of labels in photogravure differing in no way, except perhaps in being not so artistic, from the countless emissions of New Europe, is a different thing altogether, and the authorities will be well advised to think again if for the sake of cheapness and speed they have decided to replace the old line engraving by more modern methods of printing.

One reader says that too much space is given to modern stamps and not enough to the old issues. This is inevitable, for these gossip articles have to do mostly with new issues. Further, the average collector to-day cannot afford to collect anything else but stamps that have just come out, or have been issued within the last few years, for the old issues have risen far too much in price. It is the craze for specialisation that has put so many of them out of our reach. Take the "Penny Black" of our own country. This is a stamp which every collector would like to have. A good copy could be obtained for a shilling or two a year or two ago, but now costs more than a pound because certain rich collectors have hoarded thousands of copies, and it is some of these collectors who grumble so much at the craze for modern stamps who are actually doing the hoarding. It is said that the collection of one philatelist who died a month or two ago actually contained 90,000 "Penny Blacks."

A good show of really beautiful modern stamps can be obtained for a small sum, so why should anyone worry about their poularity. After all a stamp is nothing but a piece of paper. There is nothing of intrinsic value about it. Many of us get a lot of fun out of these scraps of paper, and we should not treat our hobby so seriously.

Japan used to be a very popular country with British collectors, and now that so many stamps are arriving from that country on commercial envelopes it may gain some of its old time popularity. A friend who has just returned from there says that the Japs are recovering very quickly, and shortly they are going to make themselves felt in the industrial world. Their stamps seem to be a pointer in this direction, and the one illustrated is quite interesting. When noted on an envelope it seemed at first glance to depict Father Time with his scythe, but when spectacles had been adjusted it was seen that it was an illustration of workers on a railway engine. There are several other interesting designs in the same set, and all can be picked up for a copper or so.

There is much to recommend in a used collection of Japan, but be very careful about the older issues of this country, for they have been extensively forged. Even common stamps, worth only a copper or two, have been faked. Many people before the war used to prize large sheets containing up to about 50 stamps. Any stamp dealer will tell of the offers he has had of these sheets, and it will be surprising if some readers of these notes have not got one tucked away somewhere. Alas, they are valueless. They would be dear at a shilling, for any stamp worth more than a penny is probably forged, but the modern stamps are generally all right.

And now for a word about forthcoming stamps for British Colonies. The interest in K.G. VI issues never flags, for there is always something happening to keep one's interest alive. Shades and perforation varieties were never more popular, and little wonder, for if you are a member of a good new issue service you will get all these varieties at current rates, and when they go obsolete, as they frequently do, your stamps rise in value. Of course, there is often a reversion of a perforation variety, and one which was thought obsolete becomes current again, but when that happens another one has become obsolete in its place, so nothing is lost, for it is merely a switch round. For real fun and fair investment possibilities our own colonial issues of the present reign are unequalled, but it is to be hoped that the authorities will not persist in bringing out new sets printed in photogravure like the Mauritius and Borneo sets, which are so nearly alike in style.

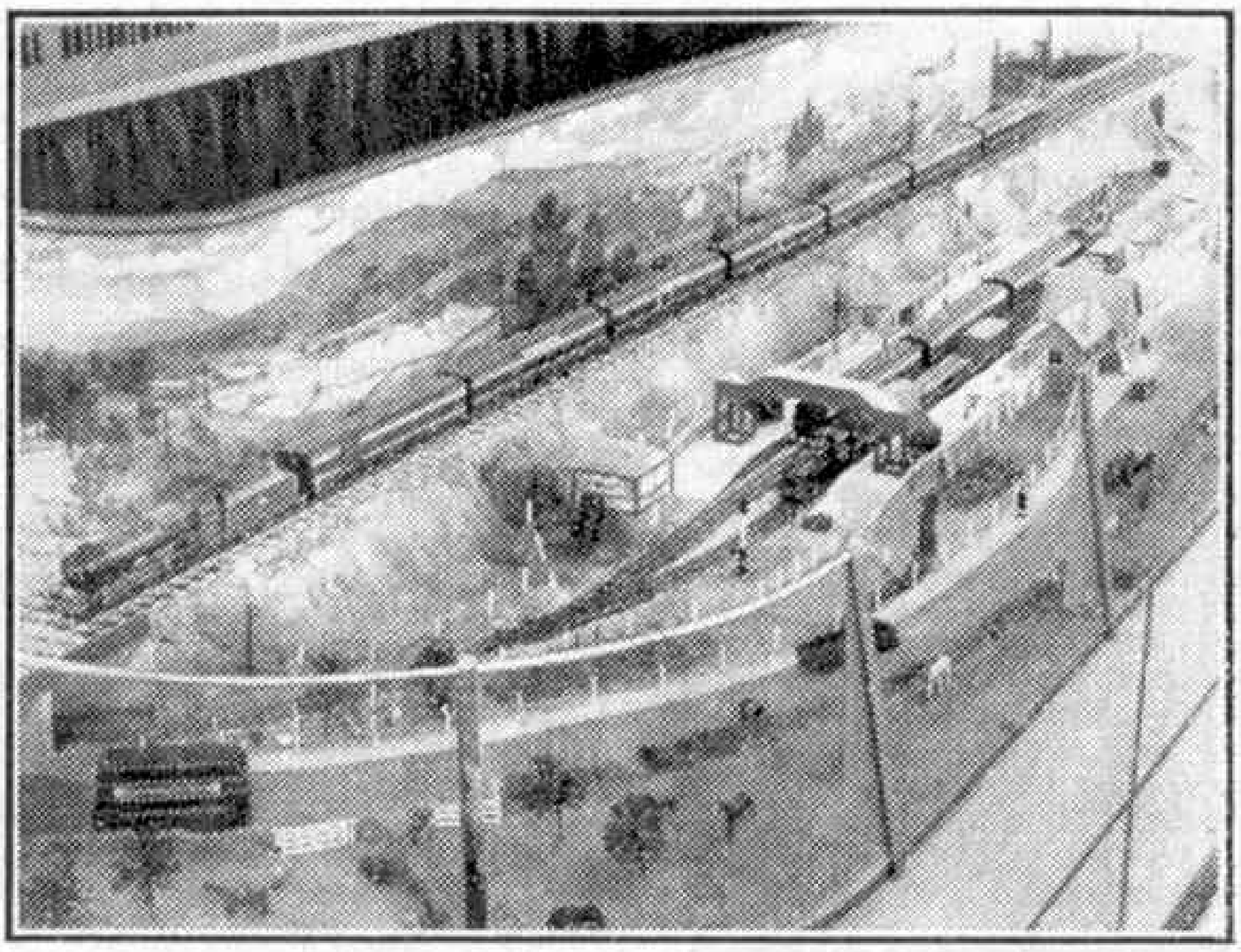
Next month we can go into the question of how to join a new issue service, and what it will cost one over a period. We will go into it thoroughly together.

AUTOMATIC EXHIBITION RAILWAY

At the Dublin Spring Show this year the C.I.E. exhibit included a miniature railway, representing a single line branch in typical country setting with branch line type locomotives and stock. The railway was completely automatic in operation, with illuminated semaphore type signals and a working track circuit diagram, and the locomotives puffed out smoke.

The goods engine represented a C.I.E. 0–6–0 tender class, while the three-coach train of modern steel-panelled stock was in charge of a 0–6–2 tank. The two trains operated alternately, with a short time interval between the arrival of one at the station and the departure of the other to give the impression that the signalman was changing the staff as in actual practice.

The stand and buildings were provided by the C.I.E., but the railway track, stock, signalling equipment, and the auto control gear were built by "*M.M.*" contributor Mr. C. L. Fry and loaned from his Irish International Railway and Tramway System. Line-side scenic modelling was carried out by Mrs. Fry.



The station and background of the miniature railway system included in the C.I.E. exhibit at Dublin Spring Show. The railway and stock were built by Mr. C. L. Fry, Dublin, by whose courtesy this photograph and the accompanying notes are reproduced.

On the roadways of the layout were C.I.E. buses, lorries, and other vehicles, many of them being Meccano Dinky Toys and Supertoys. Outside a country house stood a C.I.E. lorry with a Hornby furniture container on it to advertise removal service.

Making Railway Timetables—(*Cont. from page 387*)

Timing such trains means many complications, and the difficulties are overcome by conference of the Regions concerned, when the timings are passed on to each Region until ultimately satisfactory schedules are produced.

When next you pay a visit to your favourite station to watch operations and you see a change of engines taking place or a section of the train being detached, remember that the man who timed the train, although he may be 100 miles away, knows exactly what is taking place and just how long it should take.

Now try it on your Hornby Railway!

Policing London's River—(*Cont. from page 389*)

brand-new goods aboard the boats of "ropeys," as shipping junk dealers are called. Such cases call for a check-up. So too does the case of a boat crew attempting a landing at an unauthorised spot, for they may be smugglers of watches, spirits or cigarettes trying to evade the Customs.

Officially the duties of the River Police are the protection of life and property and the detection of crime, but anything can come the way of a Police launch on patrol. A string of barges may come adrift on a foggy night, endangering bridge structures and shipping; fire may break out aboard a tanker or in a warehouse; a bargee may break a leg, or a would-be suicide may jump from Waterloo Bridge. Sometimes there are clashes between crews of foreign vessels, or floodwater may raise the river to a dangerously high level. Rescues of drowning persons and suicides average two every day, so crews have constantly to be on the alert.

The work savours of adventure and on a warm summer day an onlooker may consider it almost congenial; but with the end of Autumn, when the cold yellow-grey fog comes swirling over the bows and visibility is practically nil, the job very soon loses its glamour. Nevertheless, not even these conditions cause the men of the "Thames Division" to seek a job ashore, and seldom indeed do members voluntarily retire from this Force with its world-wide reputation. In any case, there is always a long waiting list of would-be recruits.

New Hornby-Dublo Accessories—(*Cont. from p. 403*)

portion is modelled with deep windows and profiled ends, so that the miniature "boxman," if there were one, would have a good view in all directions. A flat projecting roof provides plenty of protection and avoids sun glare. The operating floor of the cabin is reached by a neat flight of steps leading up to a landing outside the cabin door.

Nameboards are cast on the front and the back of the cabin. These are just the right size for the station name labels, when these are trimmed as described previously, so that the cabin can be named if required.

Herring Harvest—(*Continued from page 413*)

a fair price to every skipper and crew for their hardly-won cargoes. Once the catch is sold, the drifter is soon heading for the open sea and the fishing grounds again; and so it goes, to and fro, until this great harvest of the sea is over.

Curing the herrings for export is the work of the Scottish fisher girls. Mostly the wives and daughters of the driftermen, they accompany their menfolk from port to port all through the season, working long hours each day at the quayside markets.

Blimps Over the Sea—(*Continued from page 400*)

The blimp's one great handicap is its vulnerability, but in this respect it is worth pointing out that in the last war German U-boats apparently did not dare to counter-attack airships when they were with a convoy. What is more, only one airship flying alone was shot down by an enemy U-boat, and even then only one of its crew of 11 was killed.

Thanks to helium, the modern airship cannot be shot down in flames, provided its fuel tanks are protected, so its crew would always have a good chance of survival even if the aircraft itself was lost.

For the present at least, the blimp seems certain of a place in naval aviation. There are plenty of people who think that the airship's comfort and safety will also make it a favourite on the world's civil air routes again one day.

From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

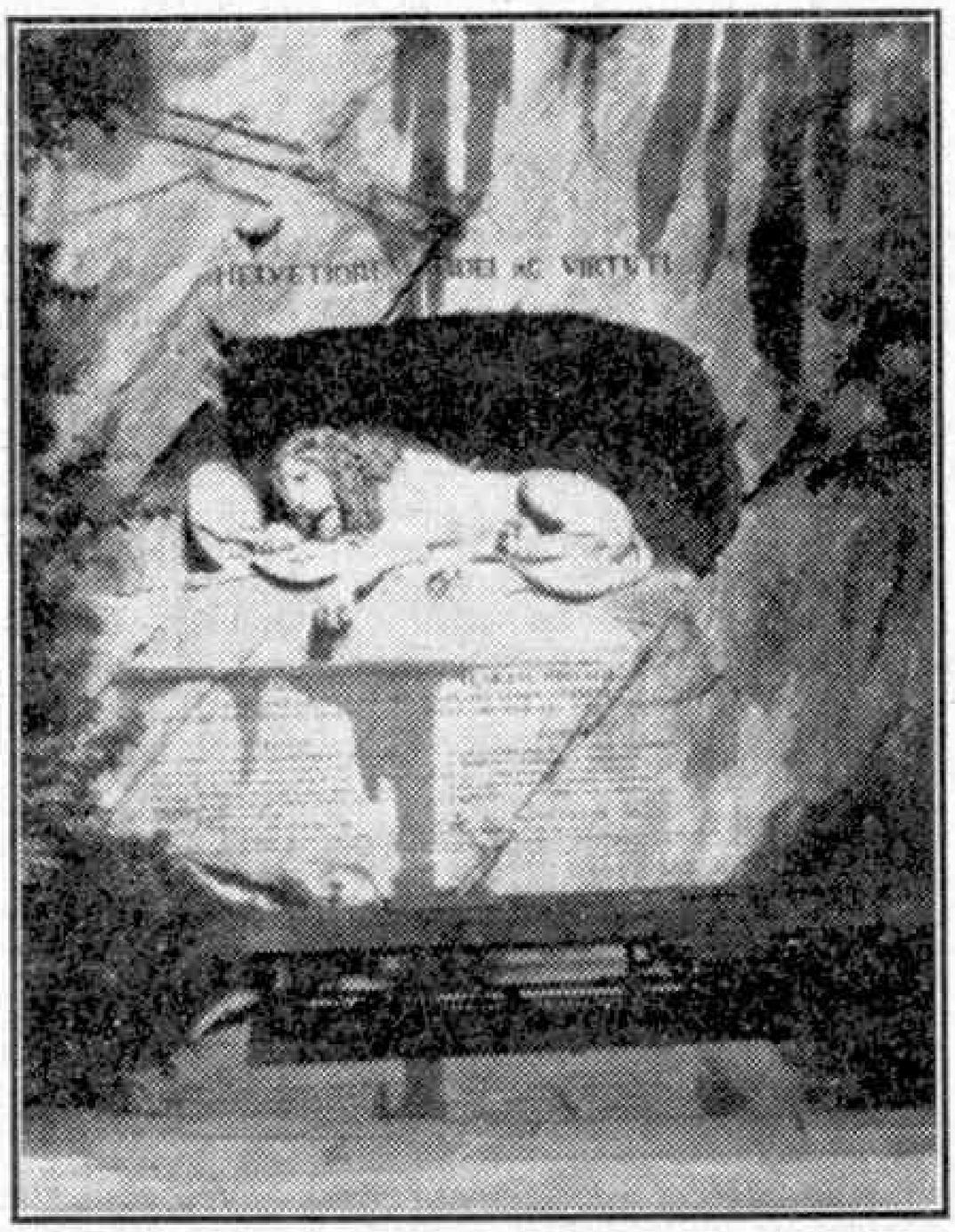
THE LION OF LUCERNE

The Lion of Lucerne lies dying in his grotto outside the Glacier Garden of the city. This memorial, touching in its realistic appearance, is dedicated to the Swiss mercenaries of Louis XVI of France, who displayed great fortitude when defending the Tuileries of Paris on 10th August 1792, during the Revolution.

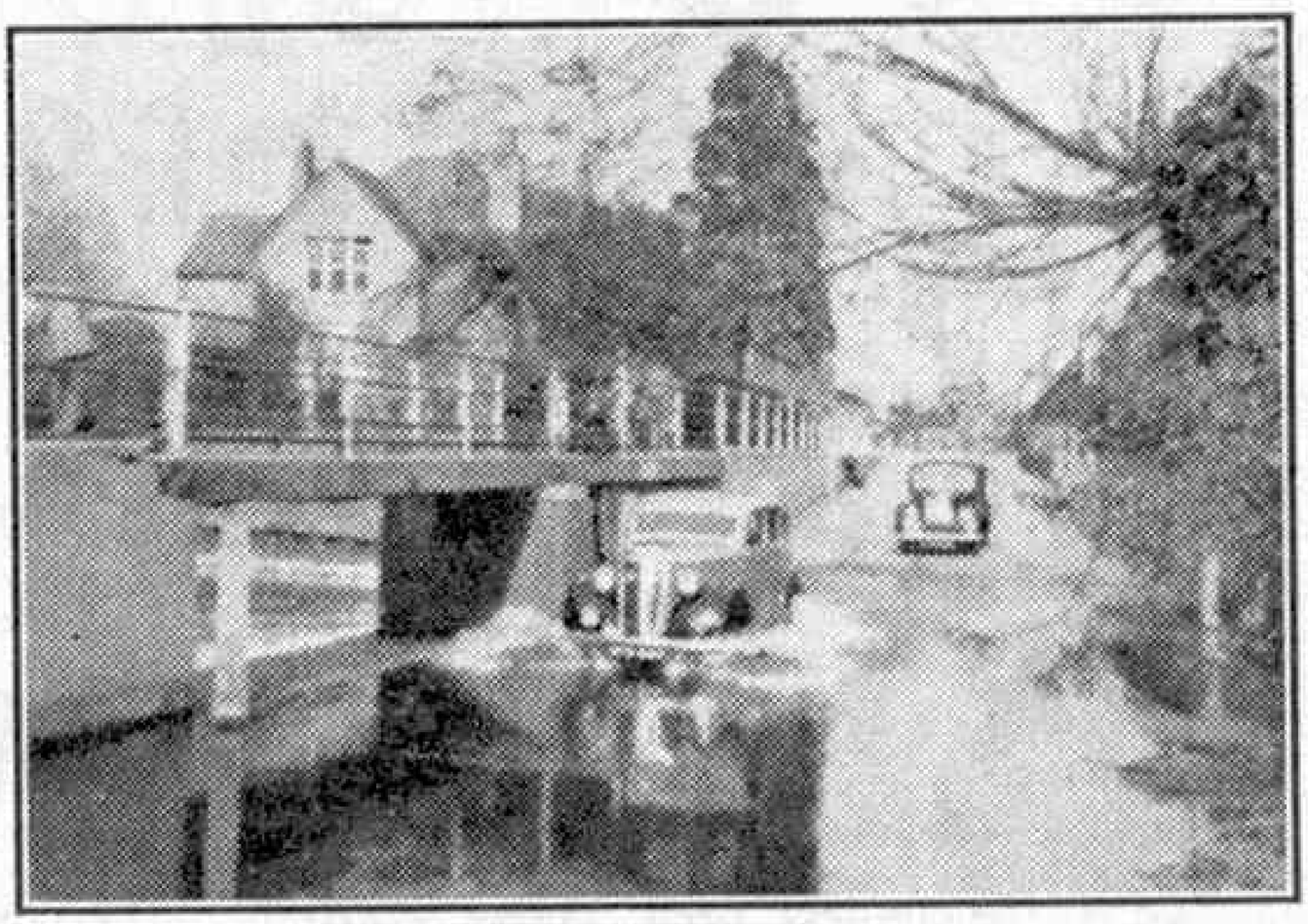
The lion itself is nearly 30 ft. in length and the grotto about 42 ft. The model was made by Thorwaldsen, the Danish sculptor, in 1821, and the Lucerne lion itself was hewn out of the solid sandstone rock of the cliff by one L. Ahorn. Before the memorial is a small pool, in which grow lilies, and it is flanked by trees. Above the grotto is the dedication "*To the loyalty and courage of the Swiss*" in Latin, and below it on the rock also are carved the names of the 26 officers who lost their lives.

The monument guards the entrance to the wonderful Gletschergarten, a remarkable relic of the Ice Age, when the countryside around the present site of Lucerne was covered by great glaciers, similar to those of Greenland and the Polar regions, grinding their way slowly and inevitably onwards. In the Garden may be seen several examples of glacier mills. These are deep, pot-shaped cavities in which lie immense boulders, often weighing as much as six tons. The largest glacial pot in the Garden is 32 ft. deep and measures 26 ft. in diameter. In the time of the great glaciers these boulders were whirled round and round by the water produced as the glacial ice melted, until they became smooth like the pebbles of a shingle beach or river bed. At the same time they hollowed out these great holes in the rocky substratum. Thus is illustrated the immense force exerted by one of nature's most fascinating phenomena.

K. E. DORAN (Chelsea).



The Lion of Lucerne, a memorial to Swiss soldiers who died defending the Tuileries during the French Revolution. Photograph by K. E. Doran, Chelsea.



The ford at East Molesey. Photograph by A. J. Reed, Aylesbury.

A MODERN FORD

The accompanying illustration shows an interesting river crossing in the district of Esher, Surrey. This is at the point where Summer Road, East Molesey, crosses the River Mole, and takes the form of a ford instead of a conventional bridge. It is within reasonable distance of Hampton Court, and as several fine modern roads cater for the traffic to this historic palace, Summer Road carries a relatively light traffic. This would not justify construction of a road bridge, although a pedestrian bridge already exists, under which there is a small weir.

The river bed is of permanent construction to prevent erosion, and is at present due to receive a further routine renovation which will raise its surface by about three inches. The river itself is normally about a foot deep in the centre, and on either side the road forms a gentle ramp down to the level of the river. The whole arrangement is technically and aptly known as an Irish Bridge, and is unique in this part of Surrey.

At the best of times the stream is too strong for cyclists, who are warned by notices to wheel their machines over the footbridge. At times of heavy rain or snow, as in the bad winter of 1946–7, whole parts of this area become flooded by the overflow of the Thames, the Mole and the Ember, and are impassable to all vehicles. Provision is made for the ford to be mechanically closed at such times.

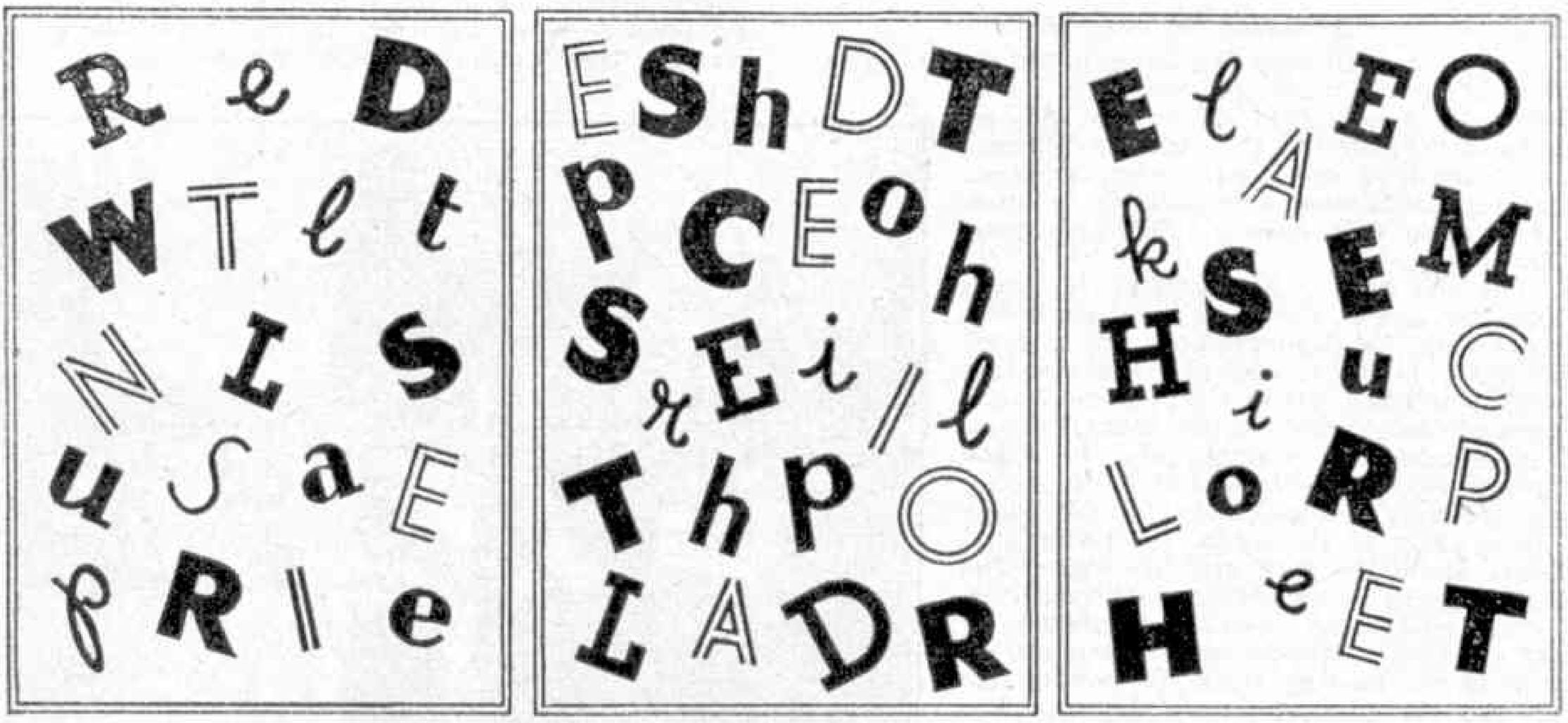
The ford enhances the quaint old world atmosphere of this corner of the Esher district, which is in contrast with the modern, built up character of much of this varied area.

A. J. REED (Aylesbury).

Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

Hidden Proverbs



The three panels seen above contain what at first sight seem meaningless jumbles of letters. In reality they are the letters that make up three well-known proverbs, which readers are asked to find. In each panel several different styles of lettering are used, and the clue to the necessary grouping of the letters into words lies in this. The manner in which any one of the three puzzles is solved is not a key to the solution of the others, and a letter may even be upside down.

As usual there will be two sections in the contest, one for home readers and the other for those living overseas, and in each prizes of 21/–, 15/– and 10/6 will be awarded to the three best solutions in order of merit. Accuracy is the first consideration, but in the event of a tie for any prize the judges will award the prizes to the neatest or most novel entries.

Entries should be addressed *"Hidden Proverbs Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing dates: Home Section, 31st October; Overseas Section, 31st January 1951.

Can You Answer These?

Readers never seem to tire of railway quiz contests, and in response to many wishes we have arranged another competition of this type. In this competitors are asked to answer fully the questions that appear on this page, and we are sure they will find this a pleasant and interesting occupation.

Here are the questions, ten in number.

1. What is a "Frog"?
2. What do the following initials mean: S.N.C.F.; L.O.R.; N.S.; N.Y.C.?
3. What is a Roundhouse?
4. What do the initials G.P.V. and B.G.V. mean?
5. What is a Mixed Train?
6. Which famous European engine type is known as Class "P8"?
7. What is the "Whyte Notation"?
8. What is the meaning of the letters P, E, or B painted before the numbers on British wagons?
9. What is a Retaining Wall?
10. What is a Flange Lubricator?

Entries should be written on one side of the paper only, and the full name, age and address of the competitor must be given. As usual, the competition will be divided into two sections, for Home and Overseas readers, and in each section there will be prizes to the value of 21/–, 15/– and 10/6, together with Consolation Prizes. If necessary the judges will take neatness and originality into consideration.

Closing dates: Home Section, 31st October; Overseas Section, 31st January 1951.

September Photographic Contest

The ninth of our 1950 series of photographic contests is a general one, in which we invite readers to send in prints of any subject. There are only two conditions—1, that the photograph must have been taken by the competitor, and 2, that on the back of each print must be stated exactly what the photograph represents.

The competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate Overseas Sections, and in each section prizes of 21/–, 15/– and 10/6 will be awarded. Entries should be addressed *"September Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13."* Closing dates: Home Section, 30th September; Overseas Section, 30th December.

Fireside Fun

Teacher: "You look pale, Willie. Are you ill?"
Willie: "No, miss, but my mother washed my face herself this morning."

* * * *

"Have you ever walked in your sleep, Sir John?"
"Certainly not! I may have motored."

* * * *

"There! Now to make this a real lesson for you, tell me what you have been whipped for."
"What? Don't you know either?"

* * * *

"Yes, that chess expert can play on 10 boards at once."
"That's nothing. I once saw a man playing on 20 pianos at once."
"Impossible!"
"Not at all. He was a fireman and the fire was at a piano factory."

* * * *

"If I give you ten sweets and you eat three, how many will you have then, James?"
"Ten, miss."
"But you've eaten three. Think again."
"I have done, miss. Ten—three in and seven out."

* * * *

"Yes, mum. I've been in jail for nearly ten years."
"Dear me, ten empty, wasted years. How you must wish to have your time over again."

* * * *

"I don't want you to go with Jimmy Brown—he's just had measles."
"That's all right Ma. I never catch anything when I go fishing."

BRAIN TEASERS

MISSING LINKS

Here are six incomplete words, each asterisk representing a missing letter. In each case the missing letters form the name of an animal. What are the words?

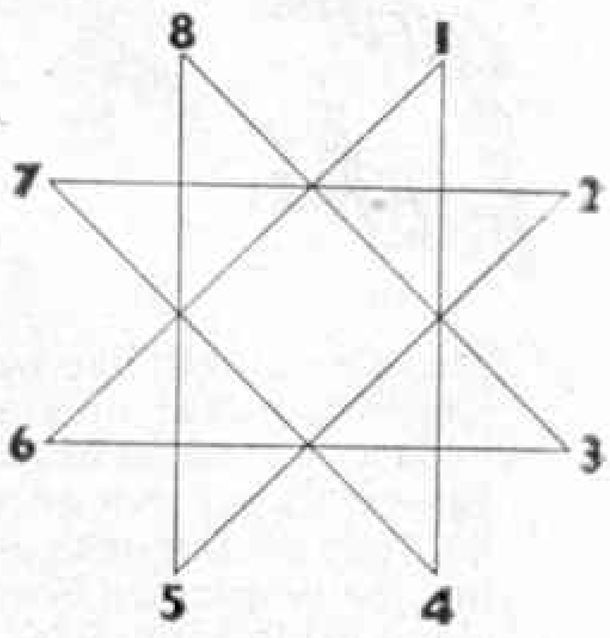
S***TER; P***TLE; *****LIA; CL***ES; P*****Y; S***OT.

* * * *

STAR FEATURE

The diagram on the right shows an eight-pointed star. Get seven counters—coins, draughtsmen or even buttons will do—and slide each in turn along a line until seven points of the star are occupied. No counter is to begin its trip along a line if the point of entry of the line is already occupied.

This is not so easy as it looks, but a simple system provides the solution.



* * * *

SQUARING UP

Here are some very simple match tricks. Use 12 matches to form four squares. Then alter the positions of four of the matches to give three squares.

When you have done this restore the original four squares and then alter the positions of three matches and still leave three squares. S.W.C.

* * * *

"So you want to borrow the scissors again. Hasn't your mother got a pair of her own?"
"Yes, but ours won't cut tin!"

* * * *

SOLUTIONS TO LAST MONTH'S PUZZLES

I find 16 ways of solving our first puzzle last month. If any reader discovered more he should write to tell me. The least numbers of coins required are four half crowns, five florins and 20 sixpences respectively.

Tommy deserves our sympathy, and whoever set the sum should be severely reprimanded, for in it we read "5 yds. 1 ft. 9 in." This makes up 1 pole 3 in., and the first line in the puzzle therefore should read exactly like the last line.

The terrible looking statement in our third problem last month certainly could not be said aloud, but it becomes intelligible if for each letter we substitute the third before it. For instance, for L we write I and for V we write S. Then the sentence reads THIS IS NOT SO HARD WHEN YOU KNOW HOW, and nobody will deny this statement.

Be in the examiner's good books

There's nothing like bold, clear handwriting for making a good impression on an examiner! A Blackbird pen not only has a 14-ct. gold nib that writes quickly and clearly but the whole pen is constructed to stand up to long, hard wear. It's at a price you can afford too! In black, green, blue or grey. Price 14/8 (inc. tax)

★ *Ask your stationer to show you some*

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CALLING ALL SPOTTERS

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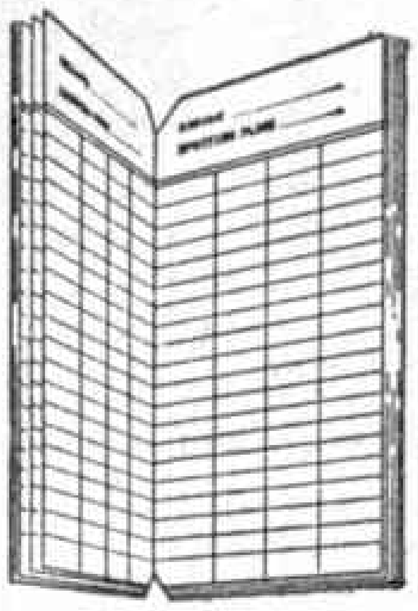
Spotters, too, should take a pride in their records and keep their engine, bus, or car numbers in the specially prepared notebook for the purpose.



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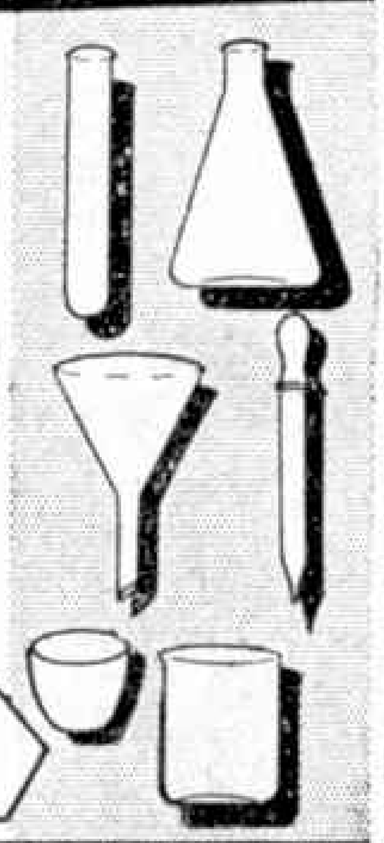

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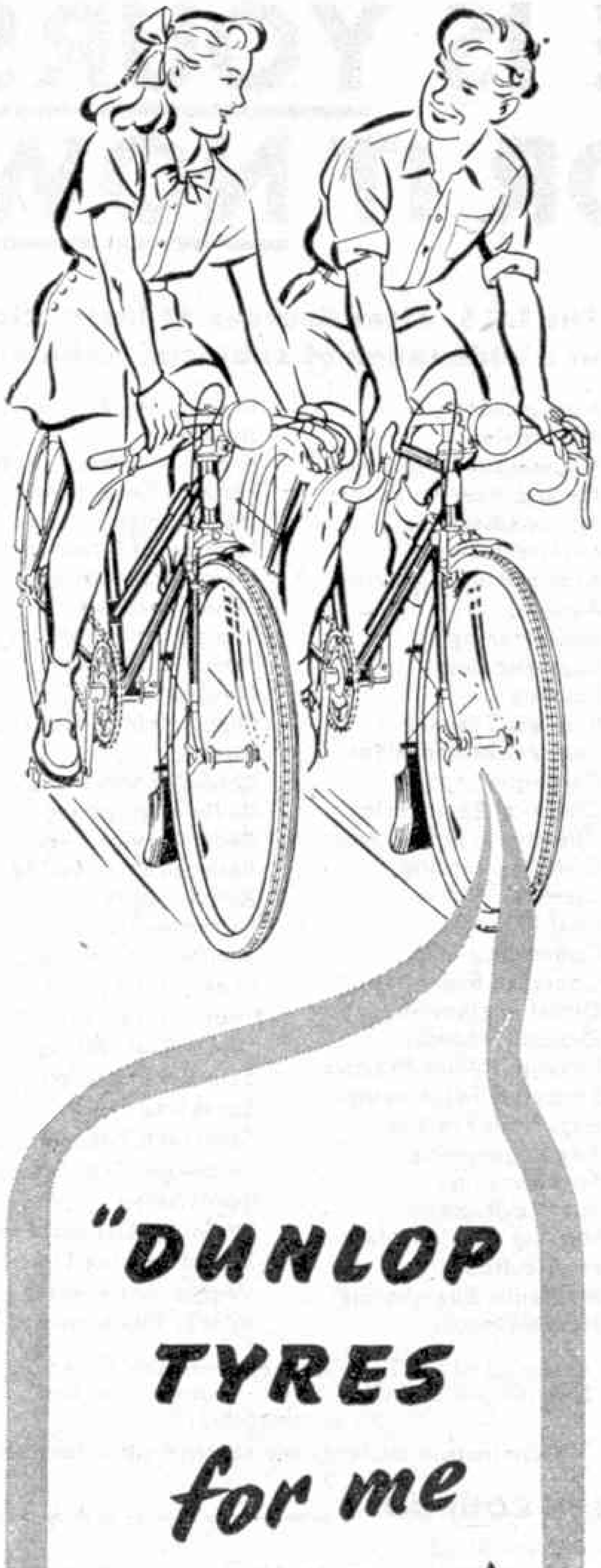

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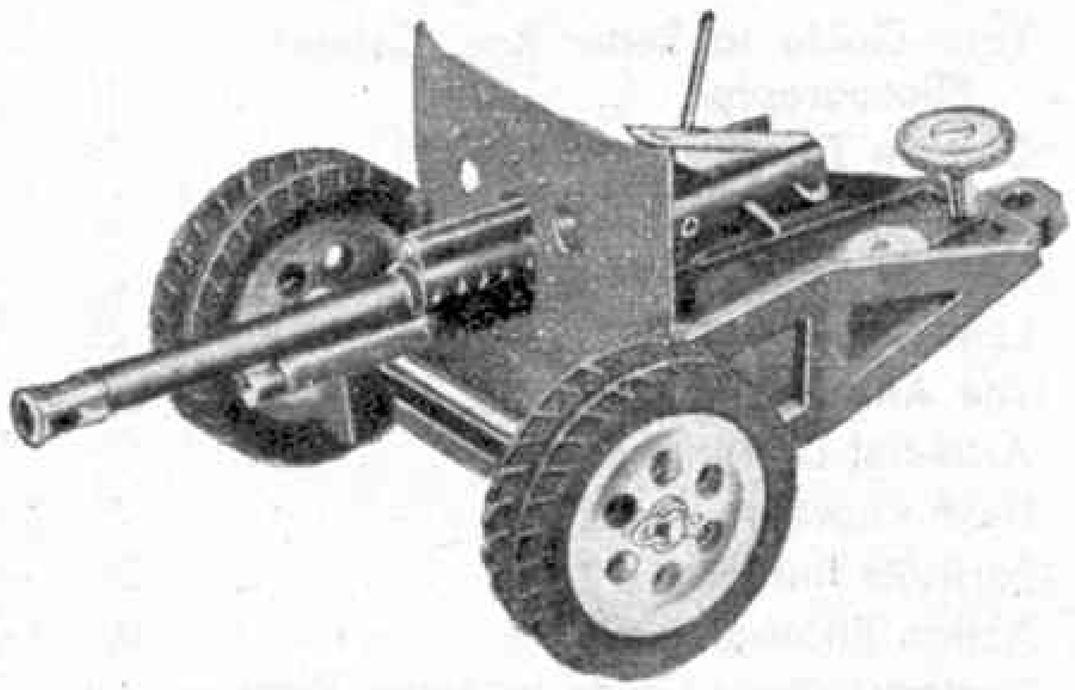

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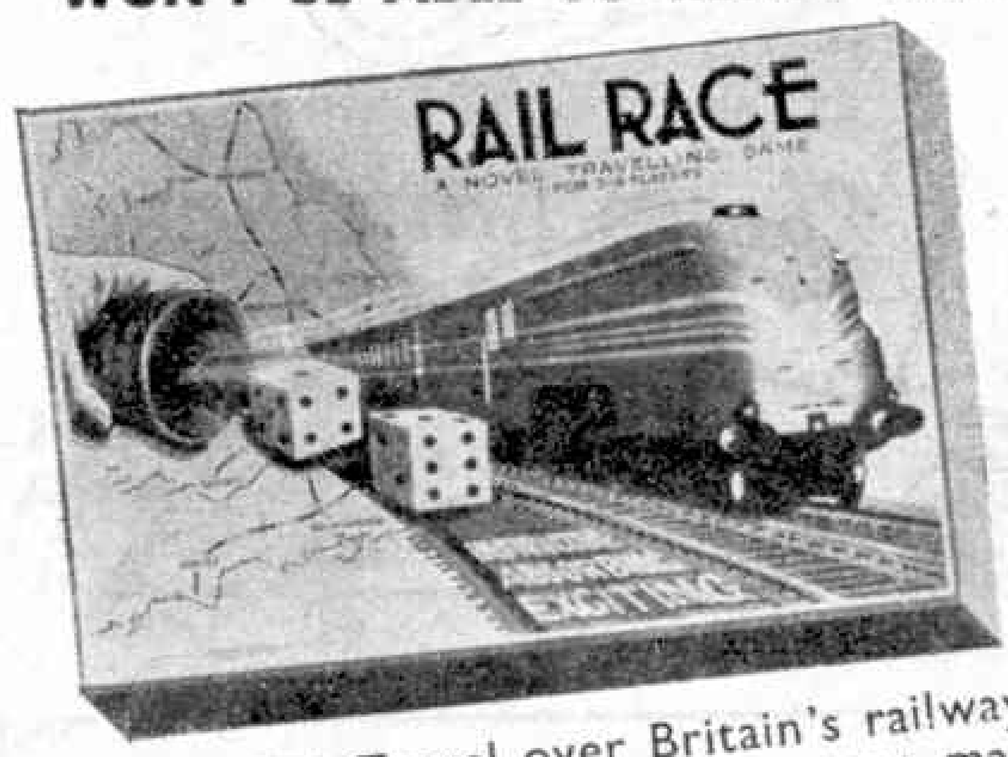

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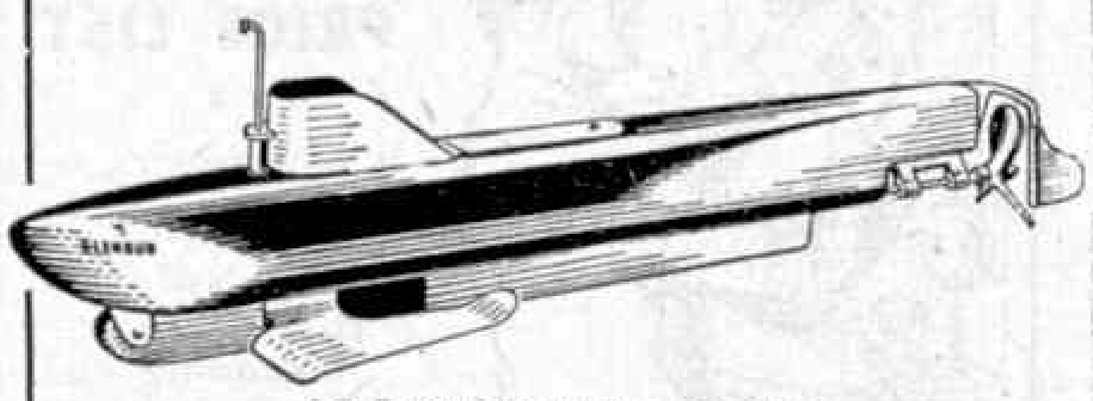

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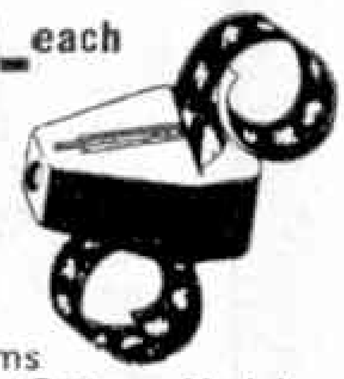

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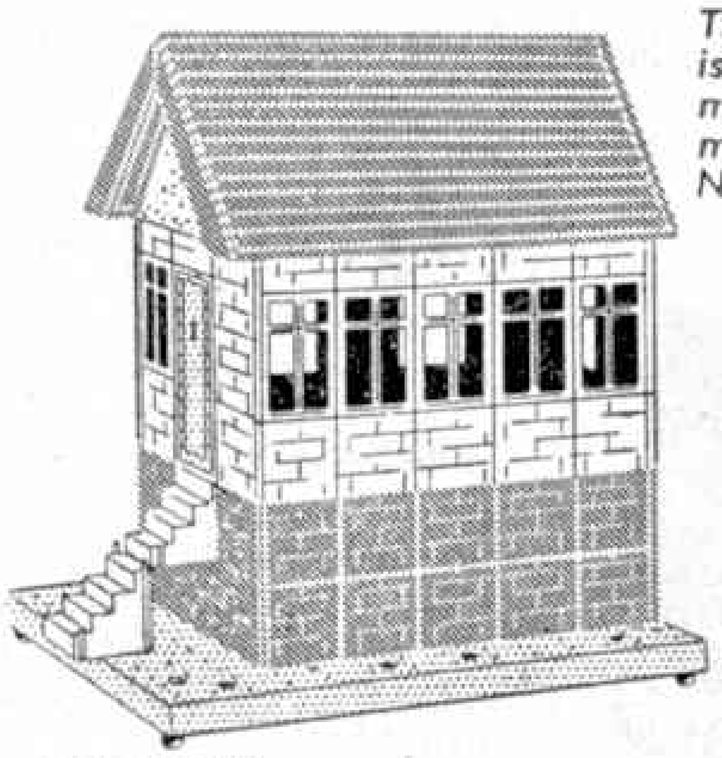

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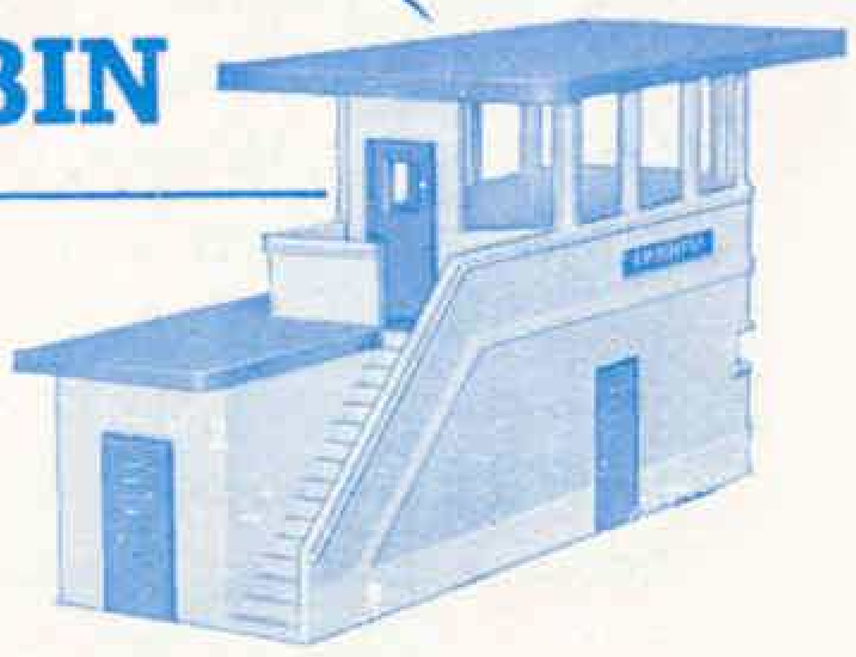

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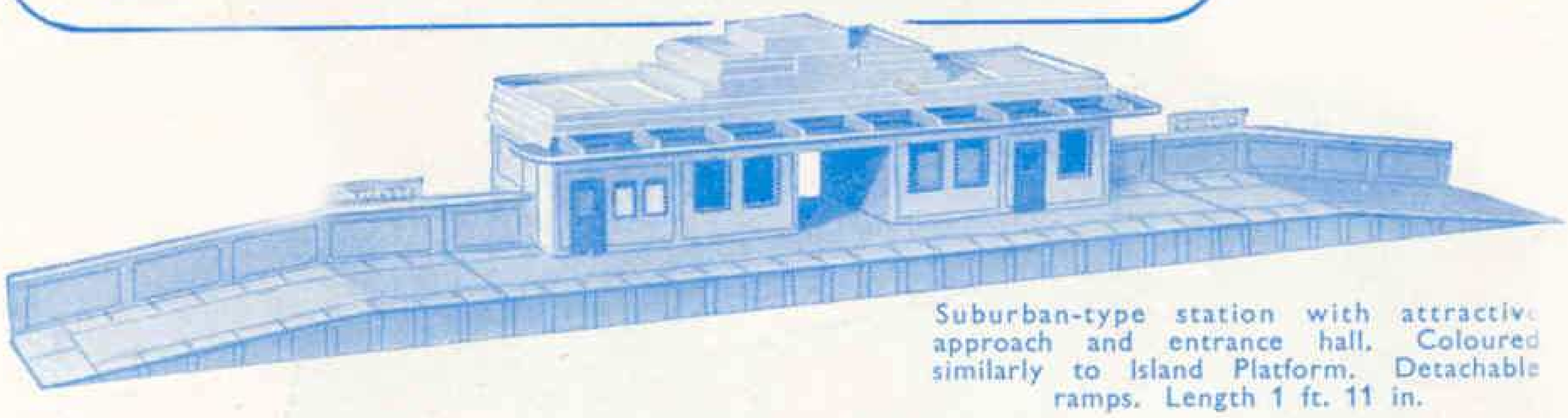

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